United States
Department of
Agriculture

Forest
Service

Environmental Assessment

for

Kitchi Resource Management

Blackduck Ranger District
Chippewa National Forest
Beltrami, Cass, and Itasca Counties, Minnesota

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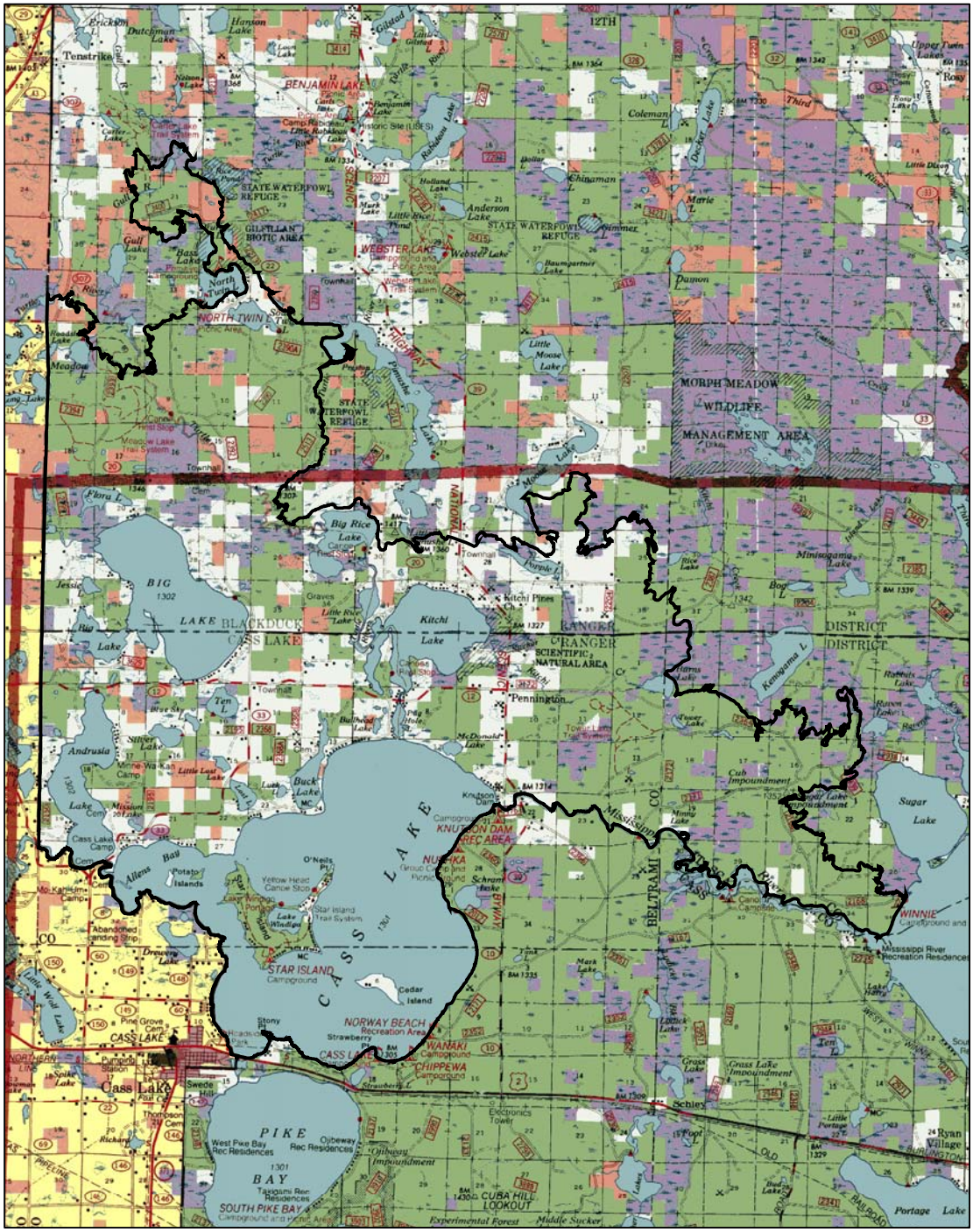
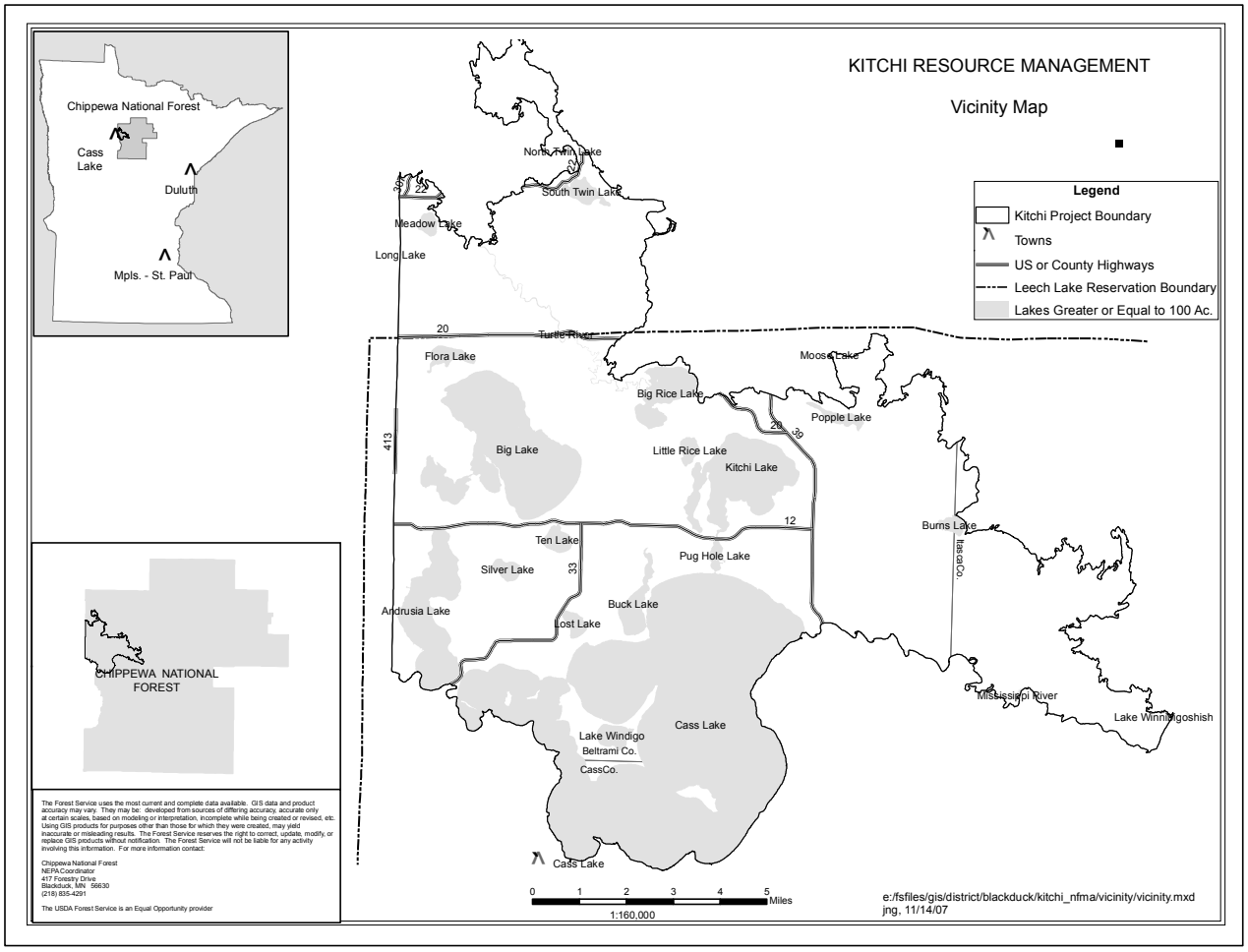


Kitchi Resource Management EA

VICINITY AREA MAP - Statewide and Forest Map



CHAPTER 1 - PURPOSE AND NEED FOR ACTION

The Forest Service has prepared this Environmental Assessment in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations. This Environmental Assessment discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Blackduck Ranger District Office in Blackduck, MN.

1.1 - INTRODUCTION/BACKGROUND

The Kitchi Resource Management (KRM) project area encompasses approximately 81,581 total acres, of which about 30,313 acres are National Forest System (NFS) lands. The project area is located between Hines and Lake Winnibigoshish in Beltrami, Cass, and Itasca Counties with boundaries as follows: North is various landscape ecosystem (LE) boundaries, east is Lake Winnibigoshish, south is the Mississippi River and the south shore of Cass Lake, and west is the Forest boundary. (See Vicinity Map.) The legal description is Township 145 North, Range 30-31 West; T146N R29-31W, T147N R29-31W, and T148N R31W.

The location was chosen to implement the management direction of the Chippewa National Forest Land and Resource Management Plan (2004 Forest Plan or just Forest Plan). The boundary of the KRM area was chosen because it is a fairly well-defined area based on landscape ecosystems (LE) that the Forest Plan emphasizes.

This analysis is based on input from an interdisciplinary team with knowledge of the Environmental Impact Statement and Record of Decision for the 2004 Forest Plan, the 2004 Forest Plan, knowledge of on-the-ground conditions of this part of the Forest, and professional knowledge of all the various resources found in the KRM EA area.

This analysis is tiered to the Environmental Impact Statement and Record of Decision (PR# 72a) for the 2004 Forest Plan (PR# 72). All activities would be consistent with the intent of the Forest Plan.

Notes on the analysis: There will be minor differences between acreage figures for similar tables and analyses. This is primarily due to different sources of data and rounding errors. This is understood and is never enough difference to change results.

The project area contains five Landscape Ecosystems (LE) and five Forest Plan Management Areas (MA), as follows:

Table 1.1.a -- Landscape Ecosystem - Description and Amounts

Landscape Ecosystem	Acres of NFS lands in KRM area in this LE	% of NFS lands in KRM area in this LE	Acres of all ownerships in KRM area in this LE	% of all ownerships in KRM area in this LE
DMPO - Dry Mesic Pine Oak	26,882	89%	50,957	62%
MNH - Mesic Northern Hardwoods	1,166	4%	2,356	3%
DP - Dry Pine	1,046	3%	2,743	3%
DMP - Dry Mesic Pine	581	2%	1,127	1%
TS - Tamarack Swamp	373	1%	762	1%
Large Lakes	11	<1%	23,634	29%
Total	30,059	100%	81,579	99%

Table 1.1.b -- Forest Plan Management Areas - Description and Amounts

Mgmt Area	Acres of NFS in KRM in this MA	% of NFS in KRM in this MA	Acres of all in KRM in this MA	% of all in KRM in this MA
General Forest (10.1)*	14,876	49%	28,124	34%
General Forest - Long Rotation (10.2)*	9,786	33%	16,023	20%
Riparian Area Emphasis (RE MA) (8.6)*	3,069	10%	10,521	13%
Unique Biological, Aquatic, Geological, or Historical (UB) (8.3)* Gillfallen Area Mississippi River Corridor Pennington Orchid Bog Ten Section Area (Star Island/Cedar Island)	2,308	8%	3,373	4%
Candidate RNA MA (CRNA MA) (8.2.a)* Pimushe Area	4	0%	4	0%
Water Larger Lakes in the area not included in the land base	17	0%	23,531	29%
Total	**30,060**	**100%**	**81,576**	**100%**

* The numbers are the identifiers in the GIS layer.

Table 1.1.c: Acres of Land by Ownership in KRM EA area *, **

	All Ownership	National Forest	State	LLBO	Beltrami County	Itasca County	Other	Lakes
Acres	81,580	30,061	6,514	4,271	3,253	0	11,294	26,187
Percent	100%	37%	8%	5%	4%	0%	14%	32%

* Acres differ slightly due to different GIS coverage.

** In the GIS layer 40 acres of State and 20 acres of County lands are also called LLBO lands, so acres are put in the LLBO column.

1.2 - PURPOSE AND NEED FOR ACTION

The purpose and need for the Kitchi Resource Management (KRM) project is to implement the Land and Resource Management Plan for the Chippewa National Forest (PR# 72, the 2004 Forest Plan or the Forest Plan) by meeting Guidelines, Standards, Desired Conditions, Objectives, and Goals. The purpose is to move the Existing Condition to or toward the Desired Condition. It is based on objectives for:

Meeting Landscape Ecosystem Objectives in the Forest Plan for Decade 2 and thereby providing wood fiber to the local community and other forest products for traditional gathering.
Maintaining Suitable Wildlife Habitats.
Maintaining Conditions Suitable for Social Uses of the KRM EA area
Protecting Soil, Water, Air, and Vegetation Resources.

The KRM EA area contains portions of four EAs that were completed within the last six years. Thus the KRM EA contains projects that are:

Completed, Partially completed, Unfunded so not started yet, and That were never started because they were not as useful as first thought.

There are also changed conditions due to the treatments and natural changes over time. There are maps and longer descriptions in the Specialist Report EA (PR# 480), but in summary the following projects were inside the KRM EA area but not completed in the previous 4 EAs:

Winnie North EA - completed.
Sand Plain EA - some prescribed burning, parking lot at Winnie Campground Boat Landing, and some road decommissioning.
Cass Lake EA - planting yellow birch, blueberry enhancement, planting by Andrusia Lake, and some road decommissioning.
Rambling Woods EA - There is still active harvesting in 9 stands (254 acres). North Turtle River stream restoration, improving the canoe access on North Turtle River, some riparian planting, and some road decommissioning.

Table 1.2.a -- Purpose and Need for KRM EA Projects

1. LE - Meeting Landscape Ecosystem Objectives in the Forest Plan for Decade 2 and thereby providing wood fiber to the local community and other forest products for traditional gathering.	
Existing Condition	**Desired Condition**
1a. Active Sales There are still active sales (about 254 acres) from the Rambling Woods EA so ages and forest types are not all up to date from the last planning effort. Details are mentioned under Rambling Woods projects above and in PR# 364.	Take these 254 acres into account when analyzing effects.
1b. Vegetation age-class distributions and composition Vegetation age-class distributions and composition across the Forest and/or the KRM EA area often differ from what is desired in specific Landscape Ecosystems in the Second Decade. The forest types mentioned in the Specialist Report EA (PR# 480) are the specific ones that are in the proposed action. We will use Decade 2 from the Forest Plan to analyze the effects since most of the cutting would occur then. Should increase white pine component in riparian areas. Need to treat whole stands. When stands are split by roads, compartment boundaries, or other features; be sure to include all parts of the stands in the "treatment list", especially now that it will be 10 years before we can get back to re-treat an area. The Specialist Report EA gives specific descriptions of forest types by LE that are above or below the conditions desired in the Forest Plan. This is four pages of verbal descriptions. Due to the length of these descriptions, they are not included in this table. More information can be found in the vegetation analysis section of the EA (Section 3.1) for the existing condition and conditions after treatment for each alternative.	In 2020 (10 years after this analysis) conditions are closer to the LE objectives for vegetation composition, a sustained flow of age-class distributions, and within stand diversity than they were in 2009, as described in the Forest Plan (Forest Plan pages 2-53 to 2-80). Potential activities to reach these desired conditions include changing species composition by clearcutting and planting, selective partial cutting, regeneration using existing advanced seedlings/saplings of other species, maintaining forest type but increasing % of other species. Vegetation age-class distributions and composition are at or moving toward the Landscape Ecosystem (LE) objectives described in the Forest Plan (Forest Plan pages 2-53 to 2-80) through harvesting and regeneration activities. Forest vegetation types move toward the LE objectives through a combination of converting (plant, natural), reserving specified species during harvest, and increasing selected species in stands of other types by selective harvesting and planting. Stands are maintained in a healthy condition and wood fiber production contributes to the local economy. In each LE, the 0-9 year age-class is maintained through harvest and regeneration activities. Other age classes are reduced, increased, or maintained

1. LE - Meeting Landscape Ecosystem Objectives in the Forest Plan for Decade 2 and thereby providing wood fiber to the local community and other forest products for traditional gathering.	
Existing Condition	**Desired Condition**
Under the Forest Plan 5,300 acres of old jack pine are deferred from harvesting in Decade 1.	by the choices of harvesting or the deferral of harvesting. Old jack pine harvesting would be deferred in Alternatives C and D. In Alternative B it would be included as an activity in this EA, but not harvested until Decade 2 (2014 or later), which is still within the timeframe of this analysis.
1h. Northern Hardwoods/UAM Some northern hardwood stands are relatively even-aged, where a more uneven-aged condition would be beneficial for vegetation and habitat management. This would be good for meeting scenic objectives. Treat carefully due to sensitive species. Single tree selection is preferred by the Forest Plan, but only works with tolerant tree species and gives a low volume per acre. May work in some aspen stands also to convert them to uneven-aged northern hardwood stands.	Northern hardwood stands are becoming more uneven-aged or multi-aged. Some stands have reduced basal areas to improve vigor.
1i. Tree Diversity Forested stands are described by the predominant timber species present, but there is often a wide diversity of other species present. A component of long lived conifers is desirable in riparian areas.	Within stand diversity of tree species is maintained or increased in most treated stands, e.g. higher percentages of white pine, spruce/fir, northern hardwoods, or other trees in primarily aspen or paper birch stands. White pine and/or white spruce has been increased in riparian areas.
1j. Fuels Large amounts of dead or dying trees and vegetation can lead to hazardous conditions (high fire risk), both to manmade structures and to ecosystems. Timber harvesting generates large amounts of dead fuels. Fuels reductions are often necessary. Fuels reductions can be accomplished by several methods including burning, biomass collection, mechanical treatments, hand treatments, or piling and burning. Fire is the most ecologically natural but mechanical, hand treatments, or timber harvesting are more dependable. Fuel reduction activities on the Forest are funded at a relatively low cost per acre. Since prescribed burning is expensive due to the uncertainty of burning conditions; the fire organization is changing from prescribed burning for fuels reduction, in favor of mechanical treatments and timber sales. There is still the opportunity of funding burning with KV dollars. We have concentrated our burning plans in the Lydick/Sand Plain EA area of the district. Rambling Woods EA and most of Cass Lake EA in the KRM EA area only proposed about 56 acres of burning last time. However there is one part of KRM EA area that was in the Sand Plain EA and had some proposed prescribed burning, which may still be feasible and beneficial. To be cost-effective, the burns should be medium or large sized (at least 80 to 200 acres) not small (single 20 acre stands), although small burns are occasionally done for special projects, e.g. wildlife	Activity fuels in treated stands are at levels that are safe for preventing wildfires from spreading rapidly. Natural fuels are treated as necessary to protect WUI areas and Star Island. However due to difficult access, lack of NFS lands, or the non-flammable forest types involved, there are no active projects proposed for Star Island or the Pennington area at this time. Carry forward some of the burning from the Sand Plain EA proposal.

1. LE - Meeting Landscape Ecosystem Objectives in the Forest Plan for Decade 2 and thereby providing wood fiber to the local community and other forest products for traditional gathering.	
Existing Condition	**Desired Condition**
openings. Fuels reduction/ecosystem underburns can also be beneficial to blueberry production. Pennington area is still high priority for an HFI or HFRA project due to its wildland urban interface (WUI) status and abundant residences. Most of the rest of the WUI areas in KRM EA area are along travelways and are lower priority. Star Island is hazardous for fires, since access is difficult and time consuming. The best thing that can be done out there is for the people to use "Firewise" to protect their own property and for the Forest Service to develop prevention plans and install fire breaks.	
1k. TSI Past and future planting and seeding in harvested stands results in conifers that need precommercial treatments (release from overtopping vegetation, protection from browsing and insects, or pruning).	Planted conifers receive the precommercial treatments that they need to become established and grow well. Release leaves a diversity of other species, particularly fruiting shrubs and trees, so gathering of forest resources is still a common occurrence.
1l. Thinning Many stands of red pine, white pine, and white spruce are too densely stocked for optimum timber growth.	Stands of red pine, white pine, and white spruce that are being managed on suitable timber lands are growing optimally.
1m. NNIS Non-native invasive species have become an increasing problem over the years over the whole country and KRM EA area is no different. Non-native invasive species (NNIS) are a severe problem on the district and are common in every project area. Left uncontrolled under the right conditions they crowd out native species and change entire ecosystems. There are scattered patches of non-native invasive species (NNIS) in the KRM EA area with several known sites that have been treated in the past. Primarily known along County Road 20, the Third River Road, and at Star Island Campground.	There are occasional, scattered patches of non-native invasive species in the project area, but the extent and spread of them are minimized, as well as is practical. This will be handled under a Forest-wide EA dealing with non-native invasive species. It is only retained in the Purpose and Need table because it was here when the scoping letter went to the public. NNIS projects have been eliminated from the KRM EA.
1n. Commercial Products Local communities depend on the Chippewa National Forest for a portion of their commercial timber and other forest products. (See 3a also)	The National Forest continues to provide raw materials to these important local and regional industries and to other forest vegetation users.
1o.-Temporary Roads Access to many stands of timber is inadequate for timber harvesting, but permanent roads have not been planned there in the past.	Adequate temporary roads are constructed for timber harvesting then effectively obliterated. There is no net gain in open roads.

2. Maintain Suitable Wildlife Habitats	
Existing Condition	**Desired Condition**
2a. LE/Habitat Many of the LEs are far from the desired Management Indicator Habitat (MIH) conditions. (see Purpose and Need "1b" also)	Conditions are closer to LE MIH objectives in 2020 than they were in 2010. There is the beginning of a sustainable flow of habitats for a multitude of game and non-game species. (see Purpose and Need "1b" also)

2. Maintain Suitable Wildlife Habitats	
Existing Condition	**Desired Condition**
2b. Wildlife Openings There are numerous existing wildlife openings that have been constructed in the KRM EA area for use by wildlife that prefer "edge" or open conditions. Some are in desirable locations and are used by wildlife and hunters, meeting the social part of ecosystem management, but shrubs and tree regeneration are invading these wildlife openings. Some are in locations that are not easily accessed or are not used by hunters or people viewing wildlife.	Wildlife openings that are accessible and used by hunters or people viewing wildlife as part of the social ecosystem are maintained in a grass/forb condition by various methods. Maintain desirable openings primarily by mowing. Openings that are not readily accessible or not used by hunters or for wildlife viewing and/or that are not ecologically valid within the given landscape have been regenerated with a diversity of conifers, fruiting shrubs, and/or northern hardwoods.
2d. Large Forested Patches There are nine large and mature upland forest patches (>300 acres) that are in or partially within the KRM EA area.	Large and mature upland forest patches are managed to maintain their integrity, where appropriate.
2e. TES species Threatened, endangered, and sensitive (TES) species are affected by many factors in the KRM EA area, particularly by changed habitat conditions that are caused by timber harvesting. All of the goshawk foraging territories are above 40% suitable habitat, some much higher.	TES species are protected by avoidance during harvest activities at known sensitive species locations and designing harvest treatments that meet their habitat needs.

3. Maintain Conditions Suitable for Social Uses of the KRM EA area	
Existing Condition	**Desired Condition**
3a. Traditional Resources Much of the KRM EA area is inside the LLBO reservation boundary. Gathering of traditional resources is a common activity in the area by both LLBO members and other local residents. (See 3b also) The LLBO is mainly concerned with four traditional gathering resources: Sugarbush in localized areas, blueberries, paper birch bark/balsam fir boughs, and wild rice. But also concerned with many other resources including hunting, fishing, medicinal plants, and other plants. The Forest Service is continually collaborating with LLBO to meet traditional resources gathering needs and to be sensitive to and knowledgeable of their needs and desires. (See Purpose and Need 3e for a hunter walking trail discussion.) (See Purpose and Need 2b for a wildlife opening discussion.)	Gathering of traditional resources is a common activity in the area by both LLBO members and other local residents. Traditional resources are maintained or increased as practical and are available at sustainable rates. Access is maintained to these sites. Young balsam fir trees are retained in stands on sites where they are "natural" to maintain this gathering right. Some or all sugar maple stands are managed to maintain the potential for a sugar bush. Collaboration with LLBO continues.
3b. Hunting and Fishing This project area has heavy hunting and fishing pressure.	This project area has sustainable habitats for hunting and has good water quality for a high quality fishing experience. Young forest (0-9 year age-class) for game species is in line with the Forest Plan by LE.
3c. Visual Conditions There are several sensitive scenic corridors in the KRM EA area. Management has occurred along them and there is a diversity of	The scenic quality of the KRM EA area is within the established Scenic Integrity Objectives as shown in the Forest Plan.

3. Maintain Conditions Suitable for Social Uses of the KRM EA area	
Existing Condition	**Desired Condition**
visual conditions.	
3e. Hunter Walking Trails The hunter walking trails (Meadow Lake and Tower Lake) need maintenance and management. We should do intensive management for grouse in these areas; doing the proper patch sizes, age-class distributions, species compositions, and with appropriate other features, e.g. drumming logs. The hunter walking trails need more effective closures for ATVs. It is frustrating for hunters to walk in and then have ATVs bypass them.	The Hunter Walking Trail networks have sustainable habitats for game species along them, e.g. proper patch sizes, age-class distributions, species compositions, and with appropriate other features, e.g. drumming logs. There is a shifting mosaic of aspen stands to provide the various environments that the grouse need.
3f. Lake Access The KRM EA area contains many lakes and rivers. The public has a desire to use these bodies of water, but sometimes access to them is limited. The boat landing for Andrusia Lake (2-36-42) is too small for the amount of use it gets at certain times of the year, e.g. the opening of walleye season. There are cars/trailers parked along the highway and people back their trailers off the highway, which is a safety issue. The boat landing for Big Lake (1-128-60) is too small for the amount of use it gets at certain times of the year, e.g. the opening of walleye season. There are cars/trailers parked along the road and crowded within the lot. Need to keep the boat landing on Big Lake brushed out to prevent or minimize theft and vandalism to vehicles. Winnie Campground needs a larger boat landing parking lot (as previously mentioned in Sand Plain EA). The boat landing (2-15-32) is too small for the amount of use it gets at certain times of the year. There are cars/trailers parked along the paved road and on the grass, which is a safety issue. The road leading to the canoe access on the northwest side of Pimushe Lake is too rutted for passenger car access.	Access is adequate and safe for public use of most lakes and rivers in the KRM EA area. This is interpreted as NOT being any of the 5 new boat landings allowed in the first decade under the Forest Plan (S_RWA-1, p. 2-43) since the intent and goal is to make the landings safer by getting cars parking in parking lots not along the main roads, not to increase the capacity of the use.
3i. Star Island Toilet There needs to be improved sanitation facilities at Windigo Portage on Star Island. Heritage Surveys have been completed. (2-44-8)	The Windigo Portage on Star Island has adequate sanitary facilities that are easily manageable.
3k. Gravel Pits There is a small gravel pit in 1-86-128 that has outlived its usefulness. It contains some non-native invasive plants (NNIP).	Un-needed gravel pits are rehabilitated to appropriate vegetation and a lack of NNIP (dealt with in the Forest-wide NNIP EA).

4. Protect Soil, Water, Air, and Vegetation Resources	
Existing Condition	**Desired Condition**
4a. Riparian Areas Riparian areas are very common in the KRM EA area due to the large lakes and rivers and the abundant smaller water bodies and wetlands. The Forest Plan proposes special treatments in the riparian zones around them including planting and increasing the component of	Riparian areas are managed according to Forest Plan guidance. Along many of the miles of riparian management zones on streams and lakes, there is a diversity of vegetation with long-rotation conifers being

long-lived conifers near the water (e.g. white pine or white spruce). Along the many miles of riparian management zones on streams and lakes, overmature aspen is common. Management in these zones has commonly been aspen regeneration or avoidance of treatments. Need to do some proactive management along the Mississippi River, the Turtle River, Kitchi Creek, Sucker Creek, Cass Lake, Lake Winnibigoshish, Kitchi Lake, and Lake Andrusia. Conversions away from aspen along the creeks and rivers could reduce beaver dam problems, however we often do not own much of the land so our impact would be very limited. Plus converting a 300 foot strip is very labor intensive and would take years or decades to make much difference in species composition. Other treatments could be planting and increasing the component of long-lived conifers near the water (e.g. white pine or white spruce).	common and aspen being reduced in acreage. Proactive management is done in these zones for riparian benefits.
4b. Pennington Bog Pennington Bog needs special protection from activities near it.	Protection measures are taken as needed near Pennington Bog to protect special species and the hydrology of the bog.
4d. Bass Lake Road Closure of the road to Bass Lake has been attempted several times over the last 2 decades and people continue to ride over the closures to go to the lake and to drive cross-country all over the Gilfallen Area. Under the Forest Plan this is to be a closed road, and part of the access being used is not supposed to exist. The road coming from the north was re-closed in the summer of 2009 with a larger berm and more slash. The bigger problem appears to be the southern entrance (in 1-83-19) where there is access both from NFS land and the county. Part of the access is a system road that ATV users have continued as a user developed road to the lake and elsewhere. There was a lot of discussion over this idea and we will consider both sides in the analysis.	Pro-closure: OHVs are driving cross-country in areas where there are populations of orchids. The Forest Plan recommended closing the interior roads. This lake is a designated carry-in lake and quite isolated if this road is closed. This is a rather unique fishing experience for the public. Pro-open road: There would be less damage to resources if OHVs are allowed to drive on one road in to the lake. Some people want this road open. Keeping the road open may require a Forest Plan amendment.

1.3 - PROPOSED ACTION (Alternative C)

The District reviewed the existing conditions in the project area and Forest Plan direction to determine appropriate treatments and opportunities to move the Kitchi Resource Management (KRM) project area towards meeting landscape ecosystem (LE) objectives, management area direction, and desired conditions for the Forest Plan. An interdisciplinary (ID) team went through the list of stands that have been surveyed to determine the best prescription for each stand under the purpose and need and other known factors. During the scoping period, there were public comments that changed some of the prescriptions and activities. This resulted in Alternative C as the Proposed Action (rather than Alternative B as in the Scoping Letter). Changes made to the alternative are similar in nature to activities already in the alternative, so the public had a chance to comment on this type of activity and will have a further chance to look at the specific changes during the 30-day Public Comment Period. These changes are all spelled out in detail in Section 2.1.7 in narrative and tabular form. All maps were changed after the scoping letter to reflect the changes made. The only accurate, current maps for alternatives have "(New 2010)" in their titles. If an activity map does not have this wording, then it is old and no longer accurate.

(NOTE: There are two major changes since the Scoping Letter:

1. Alternative C in the scoping letter has the same name but is not the same alternative - many changes have been made - so do not use that letter or attachment for comments or analysis. (PR# 441)

2. In the Scoping Letter, Alternative B was called the Proposed Action. As described in Section 2.1.2, Alternative C is now the Proposed Action and Alternative B is an alternative that responds to the request for maximum harvest volume. Since Alternatives B, C, and D were all in the Scoping Letter, it is felt that the comments received would not have changed significantly if a different alternative had been called the proposed action.)

Vegetation management opportunities are largely based on the Forest Plan's Landscape Ecosystem objectives for age-class distribution and species composition (FP pages 2-53 to 2-80 (PR# 72)). The particular stands for timber harvesting were chosen based on Forest Plan guidance for rotation age and condition by forest type (FP page 2-20). Vegetation management would help move the KRM EA area toward the desired conditions in the Forest Plan. The Blackduck Ranger District, Chippewa National Forest, proposes the following treatments (See maps in Appendix D also):

Table 1.3.a -- Proposed Action (Alternative C)

<table>
<tr><th>Treatment/Activity (Alt. C)</th><th>Amount</th></tr>
<tr><td>Timber Sales on about 2,579 acres of National Forest System land of about 26,556 CCF. This would be broken into several smaller sales.

As a result of meeting Forest Plan objectives the project provides timber and forest products; manages timber according to landscape ecosystems and rotation ages established in the Forest Plan; regenerates aspen/birch, etc.; and maintains or enhances many types of wildlife habitats.

There would be follow-up treatment of "activity fuels" to "safe" levels for fire protection in stands that are being thinned, especially in wildland urban interface (WUI) areas like around Pennington and Flora Lake. Activity fuel reduction can be by a combination of piling and burning, chopping, biomass removal, or hand removal. Fuel reduction by burning is preferable where feasible. Several stands by Flora Lake are specifically harvested as a WUI treatment.

Several of the activity fuels "underburns" will also be ecosystem burns that benefit blueberries and similar plants in the stands.</td><td>
<table>
<tr><th>Harvest Type</th><th>Acres</th></tr>
<tr><td>Clearcutting (coppice cut - 4102)</td><td>279</td></tr>
<tr><td>Clearcutting (patch clearcut - 4115)</td><td>140</td></tr>
<tr><td>Clearcutting (clearcut - 4117)</td><td>69</td></tr>
<tr><td>Shelterwood (shelterwood - 4131)</td><td>49</td></tr>
<tr><td>Uneven-aged management (individual tree cut - 4151)</td><td>89</td></tr>
<tr><td>Uneven-aged management (group cut - 4152)</td><td>373</td></tr>
<tr><td>Two-aged management (4193)</td><td>381</td></tr>
<tr><td>Thinning WUI (thin - 4220)</td><td>139</td></tr>
<tr><td>Thinning (thin - 4220)</td><td>1,033</td></tr>
<tr><td>Sanitation Harvesting (sanitation - 4232)</td><td>27</td></tr>
<tr><td>TOTAL</td><td>2,579</td></tr>
</table>

Fuels Treated: Fuels removal by various methods - 306 acres (167 activity + 139 WUI). Pile and burn fuels - 28 acres. Underburn stands (and some adjacent stands) - 169 acres. Total fuels treated - 503 acres.</td></tr>
<tr><td>Temporary road construction (developed for timber hauling and stand regeneration) and obliteration (closed and revegetated, per Forest Plan direction). System road reconstruction for timber sales and recreation, as needed.</td><td>About 7 roads, totaling about 0.65 miles of temporary road construction. Various access roads would be upgraded as necessary to make them usable for the timber sale. When the proposed treatment is completed, the temporary roads are obliterated.</td></tr>
</table>

Treatment/Activity (Alt. C)	Amount
Regeneration of stands **cut in timber sales** Regenerate the harvested stands with the desired species. Increases some "under-represented" species by converting other forest types through planting and selective cutting or by adding a component of other species by underplanting (planting under the residual tree canopy).	

Site Preparation Treatment	**Acres**
Site Prep - mechanical scarification or burning for planting.	120
Site Prep - mechanical scarification for natural regeneration.	25
Reforestation Treatment	**Acres**
Planting harvested stands	97

Based on meeting Forest Plan LE objectives, there would be numerous changes in forest types due to the timber sales, to opening conversions, and to natural changes. ALL CONVERSIONS ARE INCLUDED HERE (harvest and non-harvest):

Forest Types	**Acres of Types Changed**
Red pine to Jack Pine	4
Fir to Aspen	24
Ash to Aspen	3
Aspen to Jack Pine	16
Aspen/spruce to Red Pine	5
Aspen to Red pine/White Pine	3
Aspen/spruce to White Pine	0
Aspen to White pine/Red Pine	17
Aspen to Oak	61
Aspen to Northern Hardwoods	328
Aspen/spruce to Northern Hardwood	13
Aspen/spruce to White Spruce	11
Paper Birch to Jack Pine/Red Pine	8
Paper Birch to Red Pine	6
Paper Birch to Northern Hardwoods	124
Paper Birch to Aspen	0
Upland Opening to Aspen	18
Upland Opening to ash	3
Upland Opening to Northern Hardwoods	27
Upland Opening to White Pine	6
Upland Opening to White Pine/Fruiting Shrubs	2
Upland Opening to White Pine/White Spruce	1
Upland Opening to Jack Pine	7
Upland Opening to Jack pine/Red pine	2
Upland Opening to Red Pine/Jack Pine/White Spruce	5
Upland Opening to Red Pine	1
Upland Opening to White Pine/Red Pine	2
Upland Opening to Fruiting Shrubs	2

<table>
<tr><th>Treatment/Activity (Alt. C)</th><th>Amount</th></tr>
<tr><td></td><td>
<table>
<tr><td>Upland Opening to Tamarack</td><td>1</td></tr>
<tr><td>Upland Opening to Tamarack/Elm/Oak</td><td>6</td></tr>
<tr><td>Upland Opening to Tamarack/Elm/Oak/fruiting shrubs</td><td>1</td></tr>
<tr><td>Upland Opening to Tamarack/Elm/Oak/WP</td><td>2</td></tr>
<tr><td>Upland Opening to WS/TA</td><td>4</td></tr>
<tr><td>Upland Opening to White Spruce/fruiting shrubs</td><td>0</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Add a Component of White Pine in other forest types</td><td>12</td></tr>
<tr><td>Add a Component of White Pine in other forest types after sale</td><td>52</td></tr>
<tr><td>Add a Component of Red pine/Jack pine in other forest types after sale</td><td>5</td></tr>
<tr><td>Add a Component of Jack pine in other forest types after sale</td><td>10</td></tr>
</table>
</td></tr>
<tr><td>Precommercial treatments including: Release and precommercial thinning to make planted trees free-to-grow and also to leave a diversity of other species. Application of animal repellant or bud caps to decrease browsing damage to white pine and jack pine (animal damage control = ADC). Pruning is not included in this project because it is at least 8 years after planting.</td><td>
<table>
<tr><th>Treatment</th><th>New</th></tr>
<tr><td>Release</td><td>185</td></tr>
<tr><td>Animal Damage Control</td><td>157</td></tr>
<tr><td>TOTAL TSI</td><td>342</td></tr>
</table>
</td></tr>
<tr><td>Riparian planting: There are some lakeshores and river banks where it would be good to increase the future amount of white pine for eagle nest trees and for diversity.</td><td>Total of 51 acres: White pine - 45 acres. White pine/white spruce - 1 acre. Red pine/jack pine - 5 acres. (Site Prep included above.)</td></tr>
<tr><td>Ecosystem Burning: There are several large old red pine (and white pine) stands that would benefit from underburning to reduce hazel and diversify/reinvigorate the understory plants, including blueberries. Not related to timber harvesting stands.</td><td>About 278 acres of understory burning in two large blocks.</td></tr>
<tr><td>Wildlife Opening Improvement - keep existing, desirable openings in an open grass/forb condition with only scattered trees or shrubs that provide valuable forage benefits, e.g. ruffed grouse habitat. Treatments include bush-hogging and hand cutting, with prescribed burning on some of the drier and sandier sites.</td><td>142 acres in 80 openings in the KRM EA area.</td></tr>
<tr><td>Wildlife Opening Revegetation - there are several openings that are better managed as part of the adjacent timber stands. Some of these have difficult access. Some are in locations that are not receiving large amounts of social use.

Many are planted with conifers to return them to a tree cover that is compatible with the adjacent stands, especially white pine, which would also help to meet LE objectives for species composition and possibly riparian function in some stands/locations.</td><td>24 openings (35 acres) would be revegetated by planting (sometimes with mechanical scarification (5 acres)) a combination of white spruce, white pine, red pine, jack pine, tamarack, elm, oak, and fruiting shrubs where the predominant species are white pine (8 acres), white spruce (4 acres), red pine (6 acres), jack pine (7 acre), fruiting shrubs (2 acres), and tamarack (10 acres). White spruce, tamarack, oak, and elm are favored where access for future TSI is most difficult. Spading in about 10 large white pine rather than planting seedlings is favored where access is good. (Conversion included above.)</td></tr>
<tr><td>Wildlife Opening Natural Revegetation - there are several openings that are in northern hardwood, sugar maple, or oak stands where they would not naturally occur very commonly and</td><td>40 openings would be revegetated by natural seeding or root suckering of the adjacent forest type on about 48 acres to northern hardwoods (27 acres), aspen (18 acres), ash (3</td></tr>
</table>

Treatment/Activity (Alt. C)	Amount
some stands in other undesirable locations.	acres), and jack pine (1 acre) (conversion included above).
Improvement of the Andrusia Lake Boat Landing with a new off-site parking lot north of the highway to the east to safely handle the amount of use it receives so there is parking along the main roads.	Construct a 2 acre overflow parking lot in 2-36-5, about 200 feet east of the existing lot.
The Windigo Portage on Star Island has inadequate toilet facilities.	Construct a new toilet near the portage (in 2-44-8).
The road leading to the canoe access on the northwest side of Pimushe Lake is too rutted for passenger car access.	Upgrade the road to passenger car access by filling mud holes and graveling soft spots (FR 3451).
Bass Lake should be maintained as a carry-in access lake from North Twin Lake, but also allow limited driving access from the east, since some people desire it. The Gilfallen area needs to have orchids protected (3315).	Rather than close the road, fix it so people use it rather than going cross-country (starts in 1-83-19) (FR 2091A). This may require a Forest Plan amendment. There would be no developed boat landing on this road.
The parking lot at the Winnie Boat Landing in the campground is too small for the amount of use it receives so there is parking along the main roads.	Expand the boat landing parking lot by extending it into the north part of the campground (in 2-15-32).
There is a former gravel (sand) pit that is no longer needed and has a few non-native invasive plants (NNIP) (3315).	Rehabilitate the gravel pit in 1-86-128 by leveling the soil and seeding a mixture of native plants. The NNIP will be handled under the Forest-wide NNIP Management EA.
The boat landing at Big Lake is not of adequate size for the amount of use it receives so there is parking along the main roads.	Preferably expand the parking lot onto the upland by the gravel road, however, if necessary fill the wetland in the center of the landing to allow more parking.

Table 1.3.b - Alternative C Harvest Acres by Forest Type and General Prescription

Forest Type	Coppice (4102)	Clearcut - Patch (4115)	Clearcut (4117)	Shelter wood (4131)	Single Tree Sel. (4151)	Group Selection (4152)	Shelter (UAM) (4193)	Thinning (4220)	Salvage (4232)	Total Acres
Jack Pine (1)	0	0	0	0	0	0	0	139	0	139
Red Pine (2)	0	0	14	0	0	65	3	891	0	973
White Pine (3)	0	0	0	0	0	0	0	7	0	7
Fir/Spruce (11)	24	0	0	0	0	0	0	0	0	24
White spruce (16)	0	0	0	0	0	0	0	58	0	58
Black Ash (71)	3	0	0	0	0	0	0	11	0	14
Sugar maple (82) & Mix N. Hdwd (89)	0	0	0	0	23	132	101	0	0	256
Aspen (91, 95)	253	140	47	0	66	119	218	53	0	896
Paper Birch (92)	0	0	8	49	0	57	59	14	27	214
Totals	280	140	69	49	89	373	381	1173	27	2581

Table 1.3.c - Alternative C Conversions by Forest Type, Harvest Type, and Future Type *

Forest Type	Coppice 4102	Clearcut 4117	Shelter wood 4131	Single tree selection 4151	Group Selection 4152	Shelter UAM 4193	Thinning 4220	Component Only	Total Converted Acres	Total Component Acres
Red Pine (2)	0	4 JP	0	0	0	0	0	10 comp JP in 4152	4	10
Fir/Spruce (11)	24 095 type	0	0	0	0	0	0	0	24	0
Ash (71)	3 A	0	0	0	0	0	0	0	3	0
Sugar Maple (82)	0	0	0	0	0	0	0	10 comp WP	0	10
Mix N. Hdwd (89)	0	0	0	0	0	0	0	17 comp WP in 4152	0	17
Aspen (91)	0	16 JP 3 RPWP 17 WPRP	0	66 MNH	26 oak 94 MNH	35 oak 125 MNH	43 MNH	1 comp WP in 4102 15 comp WP in 4152 3 comp WP in 4193 5 comp RPJP in 4152	425	24
Aspen/Spruce (95)	0	11 WS	0	0	0	8 MNH	5 RP 5 MNH	2 comp WP	29	2
Paper Birch (92)	0	8 JPRP	0	0	57 MNH	59 MNH	6 RP 8 MNH	4 comp WP in 4131 9 comp WP in 4152 3 comp WP in 4193	138	16
WL Openings	0	0	0	0	0	0	0	7 JP 2 JPRP 1 RP 5 RPJPWS 1 Tama 9 Tama +	91	0

Forest Type	Coppice 4102	Clearcut 4117	Shelter wood 4131	Single tree selection 4151	Group Selection 4152	Shelter UAM 4193	Thinning 4220	Component Only	Total Converted Acres	Total Component Acres
								6 WP 5 WP + 4 WSTama 3 ash 27 MNH 19 A 2 fruiting shrub		
Total Convert	53	59	0	66	177	227	67	155	714	79

*Abbreviations in the table are A - aspen, WS - white spruce, PB - paper birch, MNH - mixed northern hardwoods, JP - jack pine, RP - red pine, Tama - tamarack, and WP - white pine.

Numbers are the affected acreages.

"comp" means a component of the species is underplanted in the stand.

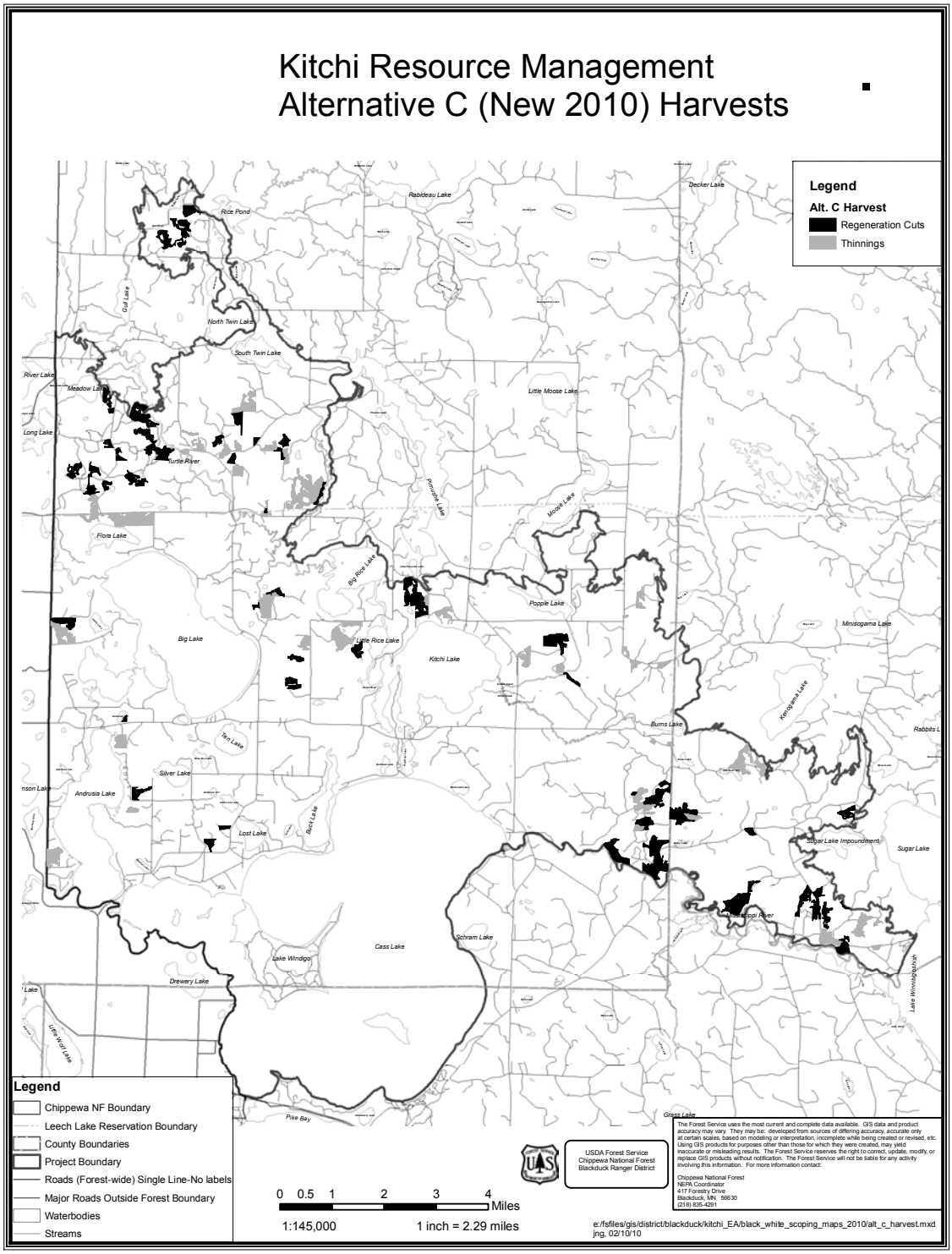
Table 1.3.d - Alternatives B, C, and D -- All Treatments* by Forest Type

Treatment	acres in Alt. B	acres in Alt. C	acres in Alt. D
Treatments by Forest Types			
Aspen (91)	1,009	877	493
Aspen/spruce (95)	169	115	70
Red Pine (2)	1,043	1,272	1,146
Maple (82)	195	161	92
Paper Birch (92)	248	213	51
Northern Hardwoods (89)	182	182	61
Jack Pine (1)	220	139	0
White Spruce (16)	58	58	58
Black Ash (71)	56	29	18
White Pine (3)	7	37	37
Balsam Fir (11)	27	24	0
Openings (97. 98. 99)	231	238	238
Total	3,445	3,345	2,264

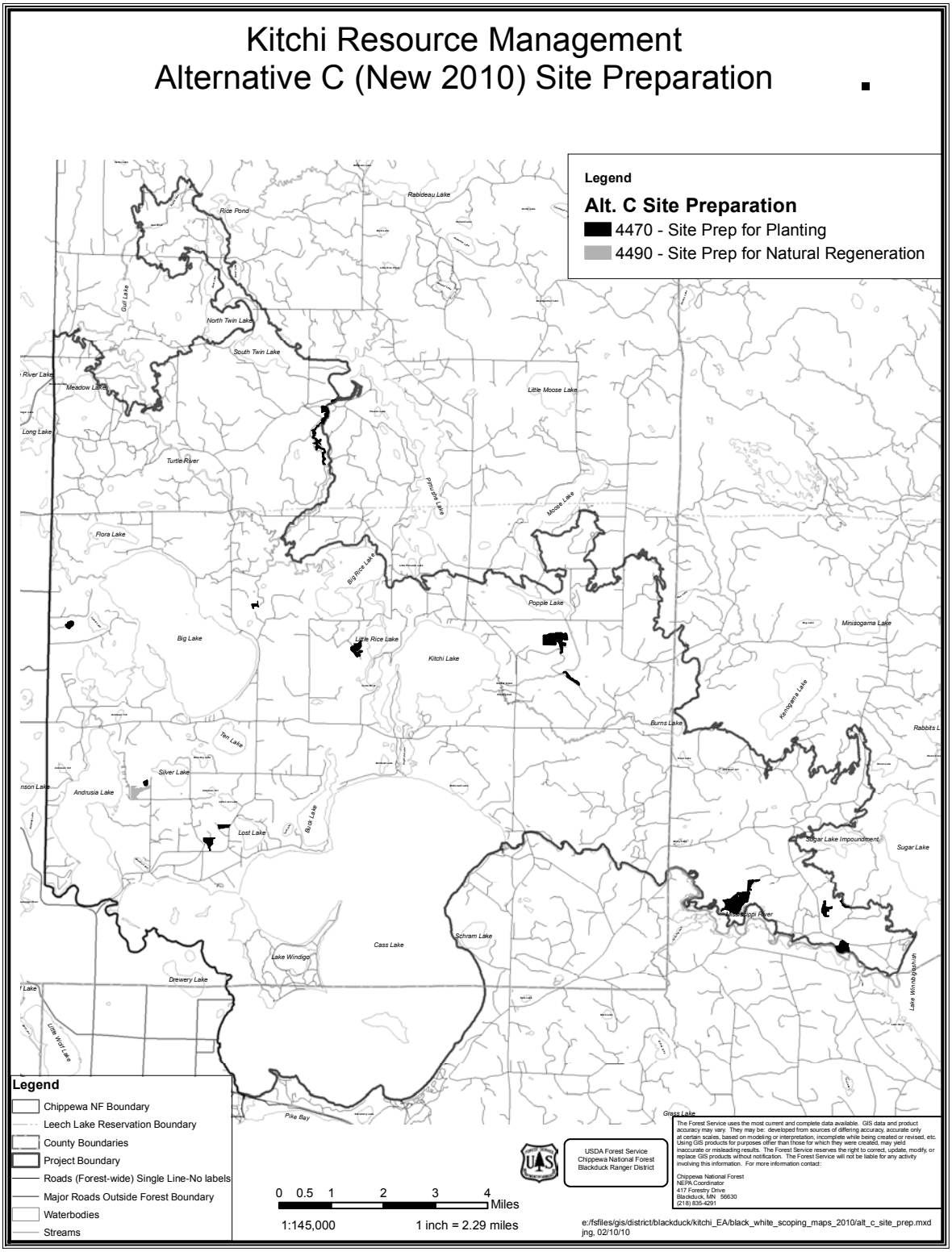
* "All Treatments" includes all proposed management activities (harvesting, other vegetation treatments, roads, boat landings, gravel pit, etc.)

The maps on the following pages give a general idea of where treatments are located in the KRM EA area. If necessary for your review, we can supply shapefiles with this information, large-scale colored ".pdf" maps, or large-scale hardcopy colored maps. They are not included with the EA because they are very large, very bulky, very expensive to produce, and most people do not need them to understand the parts of the project in which they are interested.

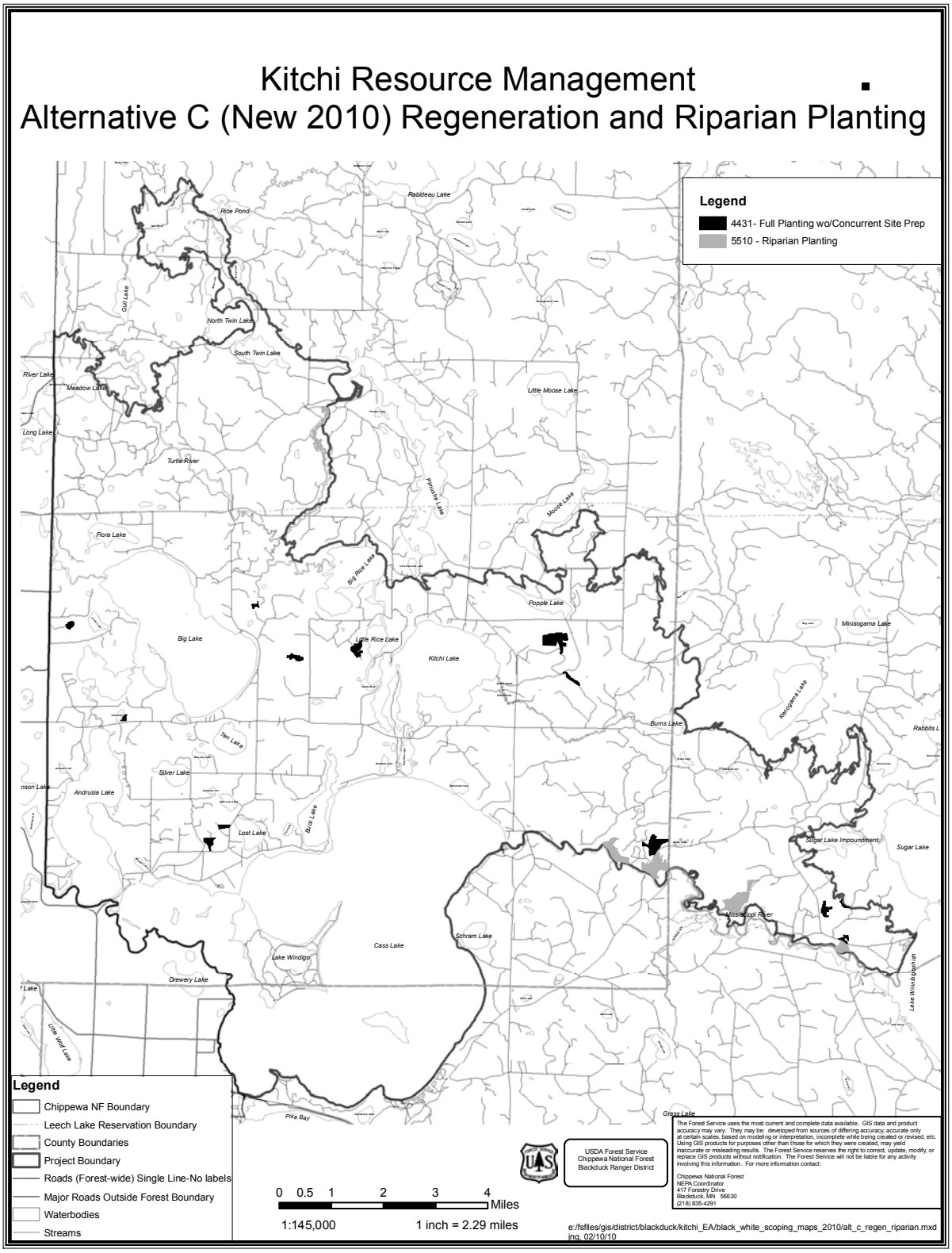
MAP 1.3.a - PROPOSED HARVEST UNITS IN KRM EA AREA (ALT. C)
(Larger scale maps showing all of these stands are found in the project record. (PR# 383a04, 383a05, 383a06, 383a12, and 282a13)
(The only accurate, current maps for alternatives have "(New 2010)" in their titles. If an activity map does not have this wording, then it is old and no longer accurate.)



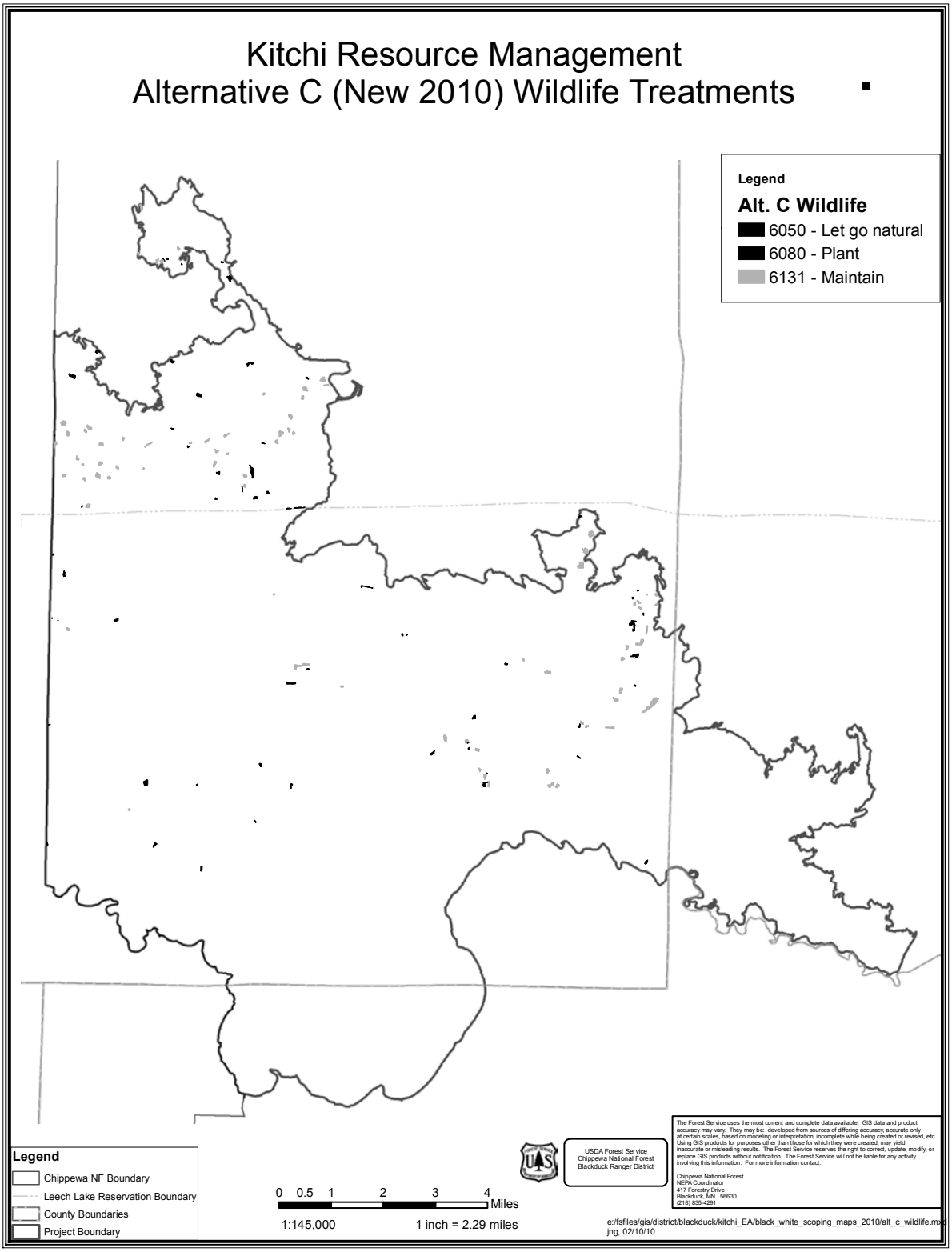
MAP 1.3.b -- PROPOSED SITE PREPARATION IN KRM EA AREA (ALT. C)



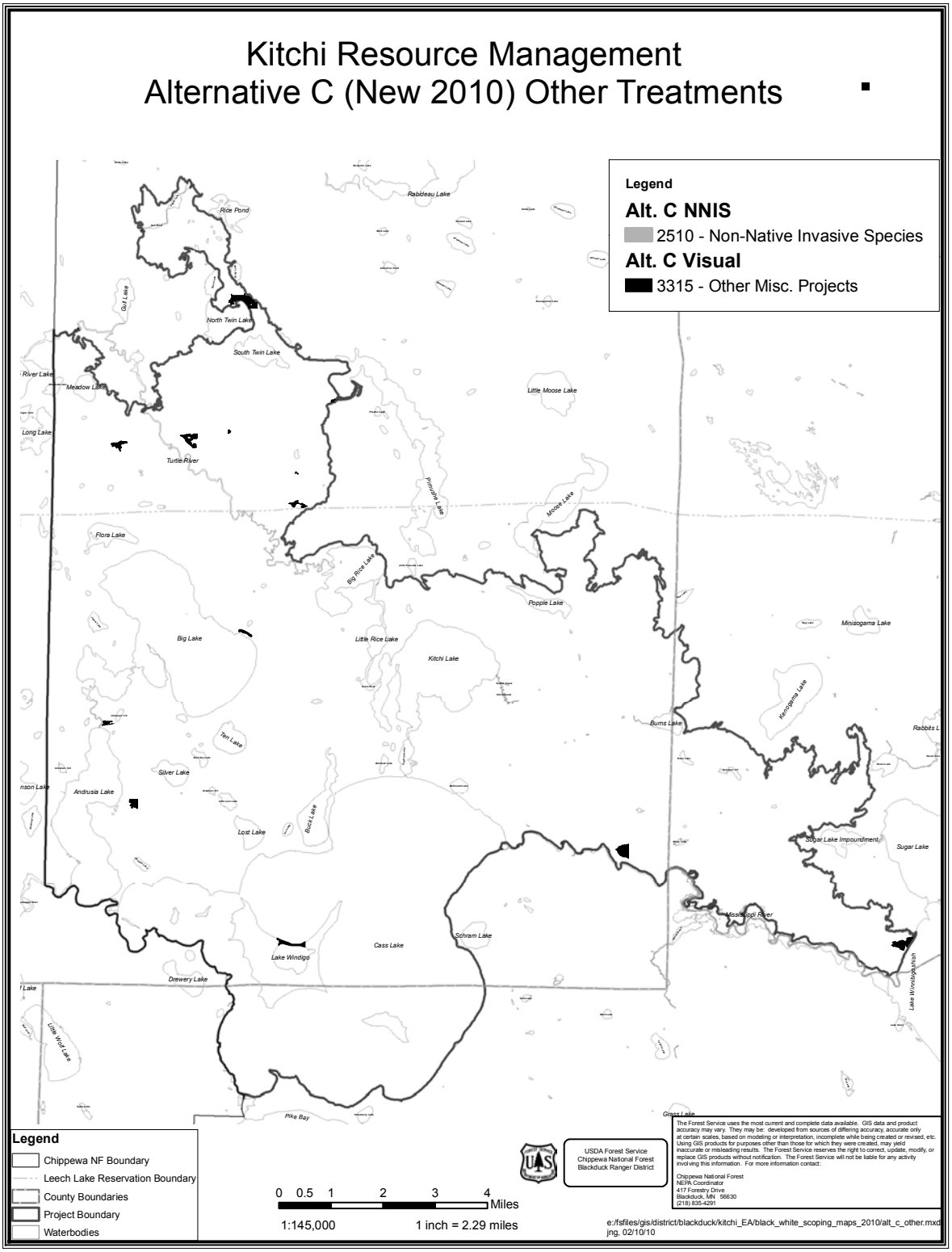
MAP 1.3.c -- PROPOSED REGENERATION/RIPARIAN PLANTING IN KRM EA AREA (ALT. C)



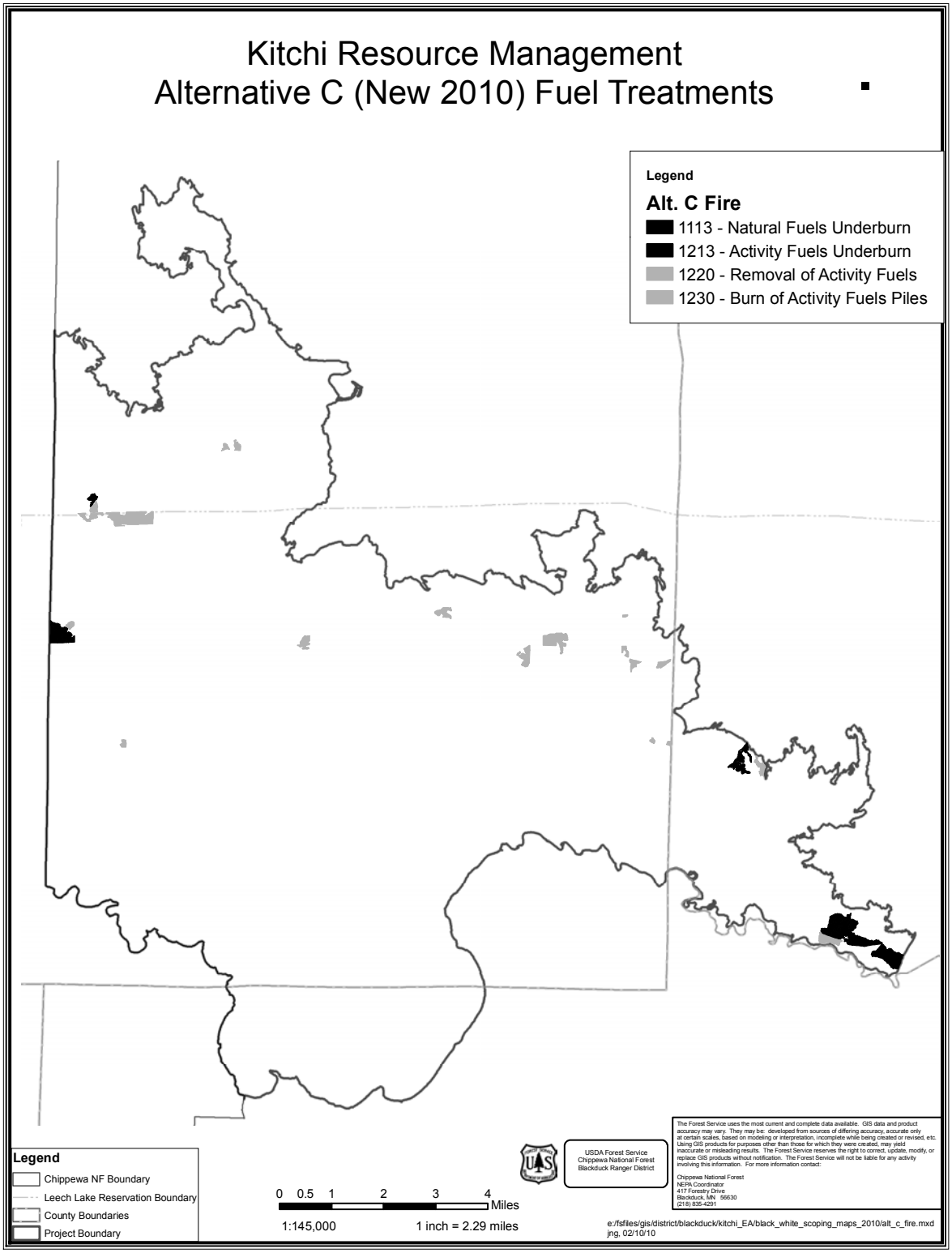
MAP 1.3.d - WILDLIFE TREATMENTS IN KRM EA AREA (ALT. C)



MAP 1.3.E - OTHER TREATMENTS IN KRM EA AREA (ALT. C)



MAP 1.3.f - FUELS/ECOSYSTEM BURNING TREATMENTS IN KRM EA AREA (ALT. C)



1.4 - DECISION FRAMEWORK

Given the purpose and need, the Responsible Official will decide:

Whether or not to proceed with the proposed action, another action alternative that meets the purpose and need, or a modified portion of an alternative.

If an action alternative is selected, what mitigation and monitoring of environmental effects may be necessary.

1.5 - SCOPING AND PUBLIC INVOLVEMENT

On November 20, 2009 a letter and attachment (or summary of the attachment) (PR# 286, 286b, 286d, 288, 288b, and 288d) was sent to 186 individuals, groups, and agencies (PR# 286a and 288a) (as well as posting it on the Chippewa NF website on 11/19/2009 (PR# 285a and 285b)) soliciting comments on this proposed action and alternatives to it. This letter also went as a Section 106 Consultation notification letter to the Tribal Historic Preservation Officer (THPO) for Leech Lake Band of Ojibwe (PR# 286). The legal notice for this action was published in the Blackduck *American* on November 22, 2009 (PR# 284, 284a, and 285). More detailed information was sent to Leech Lake Band of Ojibwe DRM (PR# 286e and 286f). The proposal was listed in the Forest's Schedule of Proposed Actions (NEPA Quarterly) on a quarterly basis from July 2008 to present (PR# 193, 199i, 214, 226a, 239aa, 239n, 350, and 342).

In response to the letter and subsequent contacts, between November 23 and December 23 we received six comments from the public (with a seventh coming later) (PR# 329, 331, 333, 335, 340, 343, and 407). Responses to all of these comments are found in Appendix C and in the analysis of effects. The Project Record contains the mailing lists and these letters or notes, as well as other subsequent comments. Appendix C (Response to Comments) lists the people who commented, relevant parts of their comments, and how we responded to each one.

As of 4/12/2010 to meet the Traditional Resource Protocol (Chippewa NF, April 2007), we consulted on this project with four Local Indian Councils (LIC) (Cass River, Mission, Sugarbush, and Cass Lake) to at least some degree on 11 occasions (PR# 192a, 199d, 220, 230, 231, 235, 270, 271, 271a, 272, 325, and 375) and the Division of Resource Management (DRM) of the Leech Lake Band of Ojibwe (LLBO) four times (PR# 160, 226, 239v, and 375). It has received more attention than most past projects because this is an area of heavy traditional use/gathering and the LICs are becoming more active.

Using the comments from the public, other agencies, and internally; the interdisciplinary team revised the list of issues to address (Section 1.6 - ISSUES) and revised the proposed action and alternatives (see Section 2.1.7 for the discussion of the evolution of the project from original proposal to scoping changes).

Contacts with the Leech Lake Tribal Historic Preservation Office (THPO) and State Historic Preservation Office (SHPO) have been made and consultation under Section 106 is ongoing. The Section 106 Consultation letter was sent to the THPO and to the SHPO on (PR#).

The above paragraph is just a place holder at this time, pending the Section 106 Consultation letter which comes later after our final meetings with LLBO after the EA is completed.

1.6 - ISSUES

KEY ISSUES

Key issues are discussion points that resulted in new or revised alternatives. These are based on discussions of Public Comments at the January 14, 2010 ID Team meeting. (PR# 440)

Key Issue 1. Amount of Harvesting:

The timber industry has stated that cutting according to the proposed alternatives is not enough timber harvesting to meet the Forest Plan guidance of 39% clearcutting, to meet Forest Plan Objectives for

the 0-9 year age-classes, or to manage the large amount of overmature aspen in the Kitchi EA area (PR# 329 and 331 Comments 33.1, 33.2, 34.1, and 34.2).

Indicators

Percentage and acreage of harvest treatments that are clearcuts/coppice cuts compared to the Forest Plan goal of 39%.

Percentage and acreage of 0-9 year age-class made by treatments.

Acres of over mature aspen treated (used >50 years for minimum age for over mature aspen)

Percentages of species compositions compared to Forest Plan LE objectives.

Key Issue 2. Traditional Resources and Uses:

The Leech Lake Band of Ojibwe has stated that managing according to the proposed alternatives results in the Forest not meeting Trust Responsibilities and is showing a lack of respect for LLBO traditional resources and gathering rights. (PR# 239v Comments 19.5, 19.6, 19.7, and 19.17; PR# 270 Comments 24.4 and 24.5; PR# 271/271a Comment 25.1; PR# 340 Comments 37.2, 37.4, 37.7, 37.8, 37.9, and 37.17; and PR# 375 Comments 40.3, 40.4, 40.11, 40.12, 40.13, and 40.19)

Indicators

Acreage and number of stands in which historic, traditional use is potentially precluded by harvesting.

Acreage and number of stands in which historic, traditional use is potentially undesirably changed by harvesting.

Effects of treatments or lack of treatments on traditionally gathered resources.

Number of stands deferred, modified, or retained that are mentioned by the LLBO as traditional gathering sites.

Acres of clearcutting changed to other treatments that maintain structure, age, and species composition or that maintain "ecological function" (Comments 37.4 and 40.5).

Acres of harvest treatments changed to less intensive methods between alternatives.

Acres of harvest treatments deferred between alternatives.

Acres of mature red pine harvest and type of harvest (Comment 19.3).

Acres of harvesting in sugar maple stands (Comment 19.6).

Acres of row thinning that decrease diversity (Comment 19.2).

Acres of mature jack pine clearcut.

Acres treated for increased blueberry production (Comments 5.1, 14.4, and 25.1).

Treatments within ¼ mile of tribal lands.

NON-KEY ISSUES

These are mentioned here and not addressed further in alternative development, but will be part of the effects analysis. These included issues or concerns that are not important enough to drive new alternatives, that are mitigated by standard "best management practices", or that would not be affected by treatments; but which do need to be considered and documented in a "full disclosure" type of EA. Additional indicators for these non-key issues would be developed and documented during the analysis for some of the resource areas.

Harvesting, roads, and other vegetation management activities, especially in riparian zones or near wetlands, may cause water quality/visual problems. (PR# 340 Comments 37.2 and 37.11 and PR# 343 Comment 38.4.)

Indicators:

BMP's required to be used to protect water resource in those zones

Acres, number of stands, and types of harvesting within 200 feet of riparian areas or wetlands.

Effects from this harvesting.

Percentage of upland in sub-watersheds in young and open condition.

Acres of RMZ (area within 200 ft. of lakes and streams) disturbed during vegetation management activities.

Management near wetlands or filling wetlands has negative effects on the wetlands.

Indicator:

Effects of treatments to wetlands other than RMZs.

Harvesting near the Mississippi River may negatively affect wild rice. (PR# 340 Comment 37.11 and PR# 375 Comment 40.8.)

Indicators:

Acres of harvesting along the Mississippi River.

Effects on wild rice from this harvesting.

Management activities can spread non-native invasive plants.

Indicators:

Design features implemented to minimize the spread of NNIS.

Harvest activities may negatively impact habitat for red shoulder hawk, goshawk and other sensitive species. (PR# 340 Comment 37.12, 37.13, and 37.15 and PR# 343 Comment 38.13)

Indicators:

Effects to TES and their habitats.

Excessive clearcutting leads to a lack of diversity. (PR# 340 Comment 37.4.)

Indicators:

Acres clearcut

Species and percentage of trees retained for diversity in clearcuts

Management under the Proposed Action in riparian zones does not meet Forest Plan guidance for long-lived species in riparian areas. (PR# 239v Comment 19.1 and PR# 340 Comment 37.11)

(Forest Service Comments on this issue: This is a perception of some people. This will be looked at in the analysis, but for the most part our management in riparian zones and emphasis areas is for longer lived species than the aspen that is commonly there.

Projects proposed in the riparian zones or the Riparian Emphasis Management Area do emphasize long lived species such as white pine, red pine, oak, northern hardwoods, and spruce. Of the 50 stands that enter the riparian zones, only 10 have future management for short-lived species such as aspen or jack pine (see Table 1.6.a), the other 40 keep long-lived species or are not timber harvests. None of these stands managed for aspen or jack pine are in the Riparian Emphasis MA. Each of these 10 stands has only minor pieces of the stands entering the riparian zone, usually much less than 1 acre out of each stand, so the primary management is non-riparian. When the final stand layout is done, it is quite possible that none of the "inner zone" (first 100 feet) would be treated. This non-key issue will only briefly be specifically referenced further. Table 1.6.a in the Specialist Report EA lists each stand in the Riparian Zone that is managed for short rotation species by alternative.)

Indicators:

Acres managed in riparian zones

Acres treated for long-lived species in Riparian zones

Species planted in riparian zones

Management in riparian zones is just being done to get more volume. (PR# 340 Comment 37.11.)

(Forest Service Comments on this issue: This is a perception of some people. Management in riparian zones and the Riparian Emphasis Management Area are done to meet Forest Plan goals and objectives. These areas cannot be avoided without negative consequences to landscape ecosystem objectives. We are managing in riparian areas to increase diversity, to get long-lived species, and to move toward LE objectives. This non-key issue will not be specifically referenced further.)

Forest Service land management has effects other than the one prescribed in "prescriptions" or "environmental assessments". The Forest Service prescribes certain activities with certain effects, but does not do the activity properly, does not do what they say, or does not follow through. (PR# 340 Comments 37.10 and 37.11; PR# 343 Comment 38.12; and PR# 375 Comment 40.17.)

(Forest Service Comments on this issue: This is a perception of some people. We monitor a selected amount of our activities to see how we are doing, as described in our Forest's annual monitoring reports (PR# 73, 122, 145, 192, and 239ee, CNF Monitoring Reports, 2004 to 2008). Anyone can monitor our activities and let us know what they think. Prescriptions for each treated stand are written to meet certain objectives, based on known conditions. There are always small areas within stands that are not typical of the average conditions, leading to slight changes or differences from prescribed outcomes. This non-key issue will not be specifically referenced further.)

Reducing upland aspen cover type acres would have a negative effect on wildlife species that depend on this forest type, particularly Ruffed Grouse. (PR# 335 Comment 36.1)

Indicators:

Acres of aspen converted to other forest types.
Acres of aspen regenerated to aspen.
Impacts on ruffed grouse.
Impacts on hunting.

Location of toilet on Star Island may affect cultural and heritage resources. Lack of improved restroom facilities perpetuates ongoing sanitation problems which may increase with increased use. (PR# 335 Comment 36.10 and PR# 407 Comments 43.1 and 43.2.)

Indicators:

Effects on recreational use of Star Island.
Effects of the toilet on visual conditions, heritage resources, water quality, and soils.
Health risks.
Cost efficiency.

CHAPTER 2 - ALTERNATIVES INCLUDING THE PROPOSED ACTION

This chapter describes and compares the alternatives considered for the Kitchi Resource Management (KRM) project. It includes a description of four alternatives considered (including the "No Action" alternative) and five alternatives eliminated from detailed study.

At the end of the 1/14/2010 ID Team meeting we decided that we had not found any comments, concerns, or issues that required the formation of another alternative. We will go forward with the four alternatives from the Scoping Letter (as modified during this meeting).

2.1 - ALTERNATIVES ELIMINATED FROM DETAILED STUDY

In response to public and internal comments, we considered five alternatives, but eliminated them from detailed study for the following reasons.

2.1.1 - Forest Plan Revision

LLBO does not agree with management under the Forest Plan (or as proposed in KRM EA). They stated that it does not meet the needs of social justice issues and the needs of the Band. (PR#375, Comments 40.7 and 40.18) (This is requesting a Forest Plan revision.)

This alternative was eliminated from detailed consideration for several reasons:

The Forest Plan was developed using extensive public input, including from LLBO, and is our guiding document.

Doing a Forest Plan revision at this time is outside the scope of this analysis and this proposed action, However, the Forest Service is committed to working with the LLBO to address and incorporate as many of the tribal concerns as feasible, while still trying to achieve resource objectives and providing forest products.

2.1.2 - Alternatives B, C, and D as written in the scoping letter (are different from the ones now in the EA).

The scoping letter contained three alternatives. They elicited a great deal of comments, which resulted in several changes to the initial alternatives. Section 2.1.7 shows the progression of alternatives as they went from the initial proposals through to the modified Alternatives B, C, and D that are analyzed in this EA. (PR#239v, Comments 19.4, 19.6, and 19.11). No maps or documents from the scoping period should be used for any further comments or analysis, since they are now incorrect. The only accurate, current maps for alternatives have "(New 2010)" in their titles. If an activity map does not have this wording, then it is old and no longer accurate. This rationale and explanation is repeated with each alternative description in the EA to be sure it is apparent to the public and internally that there have been changes made.

These alternatives were eliminated from detailed consideration for several reasons:

Alternative B was the proposed action when the scoping letter went to the public on November 23. To make the alternatives reflect what the public told us better, Alternative C is now called the proposed action, with Alternatives B and D developed based on the two key issues that were identified from public input.

During scoping, we asked the public for comments on three alternatives. We received numerous comments that were used to update, modify, and improve the alternatives. While we are using the same alternative names because of internal computer analysis needs, the alternatives are somewhat different.

Continuing to carry and analyze the initial Alternatives B, C, and D would have made the analysis more complex while adding no useful data to the final documentation.

We wanted to call the new alternatives A, E, F, and G to make it clearer that these were new alternative, however this would have required changing some complex analysis and project record documentation that had already been done. Also we determined that one of our tools would not accept alternatives named E, F, or G.

2.1.3 - Harvesting on Star Island

One of the initial considerations was harvesting on Star Island to improve the health of the large old pine and to reduce fire hazards; along with fuels management around some of the summer homes and private land. The timber on Star Island is not in the Suitable Timber Base, but could be managed for fire protection. The island has old timber around numerous private homes and Forest Service Summer Homes.

This alternative was eliminated from detailed consideration for several reasons:

Any management of the vegetation on Star Island is of concern to Leech Lake Band and to other members of the public.

The logistics of getting harvesting equipment to the island and getting the timber to the shore is quite difficult.

The best thing that can be done out there is for the people to use "Firewise" to protect their own property and for the Forest Service to develop prevention plans and install fire breaks.

There are eagle nests that restrict the season of operation.

2.1.4 - Road Decommissioning and OHV Use Map Changes

All of our recent EAs have included a proposal for road decommissioning, as guided by the Forest Plan. There are periodic changes needed to the OHV Use Maps as we learn more about the roads in question and people's use patterns and desires.

This alternative was eliminated from detailed consideration for several reasons:

This KRM EA area has been analyzed for possible road decommissioning under the four past EAs, which was felt to be adequate. Over the past five EAs under the 2004 Forest Plan (Round Island, Northwoods, Bigfork, Lydick, and Continental), the Blackduck Ranger District has designated 77.6 miles (38.6 miles of system road) of roads for decommissioning and 8.3 miles of system roads for deleting from the system because they no longer exist. This goes a long way toward meeting the forestwide Forest Plan goal of 200 miles.

OHV changes are usually very minor and handled as maintenance rather than new analyses.

2.1.5 - Harvesting 1,000 more acres of overmature aspen.

MTPA (and MFI) recommends an alternative that would harvest additional acres. Such an alternative should meet young forest habitat objectives identified in the plan. This alternative would require final harvest of 2,072 acres. The proposed alternatives only recommend regeneration harvest on a maximum of 1,261 acres (in Alternative B) (The MTPA/MFI comments mentioned 1,014 acres). (PR# 329 Comment 33.1)

This alternative was eliminated from detailed consideration for several reasons:

Alternative B was designed to clearcut all aspen, fir, and paper birch stands that could feasibly be harvested, plus changed some red pine thinning in Alternative C to clearcutting. Harvesting in additional stands was precluded by TES species, infeasible access, small/isolated stands, special Forest Plan designations, etc.

This is a tribal high interest area with many stands next to communities or used for traditional resources and gathering, so it is not culturally or socially acceptable to harvest at that intensity within the project area.

In addition to achieving other resource objectives within the project area, our limitations in budget and our efforts to provide timber sales across the forest, do not allow us to harvest every stand that could be harvested in one project. We do our best to treat the highest priority stands, while trying to achieve a balance of resource values and objectives, recognizing that many stands will be deferred and considered in our next entry.

Proposed activities that reduce mature/overmature upland aspen cover types would have a negative effect on wildlife species that depend on this forest type for part of their habitat, particularly ruffed grouse. (PR# 335 Comment 36.1)

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

2.1.6 - Changes needing to be made in the Decision Notice

For future reference in one location in the EA, after we were well along in the analysis and had run most of the complicated, time-consuming tools; we were informed that some of the activity coding was incorrect and that some of the stands in our alternatives needed to be deferred to meet Forest Plan guidance. The TES species problems are discussion in greater detail in Section 2.1.7 and Tables 2.1.7.d, 2.1.7.g, and 2.1.7.h.

Due to the difficulty of changing these stands in the computer systems, the time it would take, and the amount of re-analysis involved for a small acreage; we will analyze the project alternatives as they are described now, keeping in mind that these stands will have to change in the Decision Notice. For clarity internally, we have included the FACTS code in the prescription also.

Table 2.1.6.a -- Stands Needing Changes in the Decision Notice

D	Cmp	Std	Original Prescription	New Alt. B	New Alt. C	New Alt. D	Reason/Comments
1	78	57	Two-aged Shelterwood (4193)	Defer	Defer	Defer	When re-running the property line, it was found that this stand had been cutover leaving sparse hardwoods and patches of aspen. It is not worth logging. Better to leave as it is.
1	88	9	Coppice Cut (4102)	4102 of only north or south parts of the stand in decision notice	Patch Clearcut (4115) of only north or south parts of the stand in decision notice	Defer - no change	Goblin Fern (BOMO) in contiguous stand but north and south parts are not suitable habitat.
1	88	23	Put 250' buffer around the BOMO.	Defer in decision notice	Defer in decision notice	Defer- no change	BOMO in stand
1	88	115	Put 250' buffer around the BOMO.	Defer in decision notice	Defer in decision notice	Defer- no change	BOMO in stand
1	129	26	Coppice Cut (4102)	4193 converting to NH	4193 converting to NH	4193 converting to NH	New field recon showed an aspen stand needing to convert to northern hardwoods.
1	129	34	Put 250' buffer around the BOMO.	Defer harvest in northern half of stand in decision notice. Clearcut south half.	Defer harvest in northern half of stand in decision notice. Patch cut south half.	Defer in decision notice	BOMO in stand but only north half is suitable habitat
1	129	36	Put 250' buffer around the BOMO.	Defer in decision notice	Defer in decision notice	Defer- no change	BOMO in stand
1	129	81	Put 250' buffer around the BOMO.	Defer in decision notice	Defer in decision notice	Defer- no change	BOMO in contiguous stand
1	129	87	Coppice Cut (4102)	4193 converting to NH	4193 converting to NH	4193 converting to NH	New field recon showed an aspen stand needing to convert to northern hardwoods.
1	133	15	Thinning (4220) regen aspen	Two-aged shelterwood (4193), regen aspen	4193, regen aspen	4193, regen aspen	4220 is not a regen prescription.
2	26	64	Patch Clearcut (4115) with 250' buffer around BOMO	Defer in decision notice.	Defer in decision notice.	Defer in decision notice.	BOMO in stand

2.1.7 - PROGRESSION OF ALTERNATIVES FROM THE PRELIMINARY PROJECT PROPOSAL (PPP) TO PRE-SCOPING TO SCOPING TO MODIFIED VERSIONS OF ALTERNATIVES B, C, AND D

In the interest of clarity it was felt desirable to go through the whole progression from the beginning to Alternatives B, C, and D as they appear in the scoping letter then to some of the modifications due to scoping responses in this one section. This section includes changes made to prescriptions or alternatives based on:

Stands that were dropped from the project due to various factors (TES species, changed conditions, etc.)
Additions after the initial PPP in 2008 that added new stands and projects.
Changes to prescriptions due to collaboration and consultation with DRM or LICs.
Changes due to the results of the biological surveys.
Changes due to scoping responses from groups other than LLBO DRM/LICs.

There are some other changes between alternatives that do not show up here. These specific changes are shown in each alternative section in great detail, since they only apply to a specific alternative and are not necessarily in reply to any public contacts.

Tables 2.1.7.a to 2.1.7.h in the Specialist Report EA (PR# 480) show the fate of most of the stands that were changed during this process. Due to the length and complexity of the tables (15 pages of tables and discussion), they are summarized in this version of the EA into Table 2.1.7.a_g.

Table 2.1.7.a_g -- Stands Changed Before the Present Alternatives B, C, and D

	Reason	**Number of Stands**
Dropped before scoping	Tribal Concerns	2
Dropped before scoping	BOMO	2
Dropped before scoping	TES species	3
Dropped before scoping	Errors in data	9
Modified in at least one alternative before scoping	BOMO	1
Modified in at least one alternative before scoping	Silvicultural Reasons	1
Modified in at least one alternative before scoping	Riparian	1
Modified in at least one alternative before scoping	Hunter Walking Trail	1
Modified in at least one alternative after scoping	Tribal Concerns	31
Modified in at least one alternative after scoping	BOMO	4
Modified in at least one alternative after scoping	Other TES	1
Modified in at least one alternative after scoping	Silvicultural Reasons	2
Modified in at least one alternative after scoping	To get Maximum Volume in Alt. B	12
Deferred after scoping	Unneeded Project	11
Added after scoping	Better Project (Big Lake, Andrusia parking)	2
Defer in Decision Notice	BOMO	6

2.2 - ALTERNATIVES ANALYZED IN DETAIL

Appendix D (and Section 1.3) contains maps that show the general locations of these projects and spreadsheets that list the individual stands treated by alternative. Larger-scale maps of the projects in the alternatives are found in the project record (PR# 383a01 to 383a15).

2.2.1 - ALTERNATIVE A (NO ACTION)

The No Action Alternative (Alternative A) proposes no treatments in the KRM EA area other than on-going routine maintenance. There would be no timber harvesting, no temporary road construction or obliteration, no reforestation, no prescribed burning, no timber stand improvement in newly regenerated stands, no wildlife opening maintenance or planting, and none of the other recreation related projects. We will not move toward meeting some Forest Plan objectives for landscape ecosystems or timber management.

2.2.2 - ALTERNATIVE C (Proposed Action)

Alternative C is the proposed action. It attempts to balance all of the objectives in the Forest Plan. It harvests timber, but not to the extent of Alternative B. It puts an emphasis on harvesting and regeneration that strives to meet the Forest Plan LE objectives. The District Ranger and the ID Team developed Alternative C as mentioned in Section 2.1.7 and in light of the existing conditions in the project area and Forest Plan LE direction. Alternative C follows the guidance of the 2004 Forest Plan, meets management area direction and desired conditions for the Forest Plan, and meets the Purpose and Need.

Alternative C is Table 1.3.a and is not repeated here.

2.2.3 - ALTERNATIVE B

Alternative B puts an emphasis on harvesting timber volume. Alternative B primarily responds to input from timber industry requesting more harvest acres and more volume as reflected in Issue #2 (PR# 329, Comment 33.1, and previous comments). This alternative is designed to harvest more acres of timber than Alternative C and to harvest more by regeneration cutting, e.g. some red pine thinning in Alternative C is clearcutting in Alternative B. Alternative B includes all of the harvested stands in Alternative C. It is also designed to maintain or protect other resources such as TES locations and goshawk habitat. It does not include much of the ecosystem burning because of timber industry's past comments about charring damage to trees, which may reduce the value, especially in pulpwood. (PR# 441)

During the scoping period, there were public comments that changed the prescriptions and activities. This resulted in Alternative B as shown here. Changes made to the alternative are similar in nature to activities already in the alternative, so the public had a chance to comment on this type of activity and will have a further chance to look at the specific changes during the 30-day Public Comment Period. These changes are all spelled out in detail in Section 2.1.7 in narrative and tabular form. The only accurate, current maps for alternatives have "(New 2010)" in their titles. If an activity map does not have this wording, then it is old and no longer accurate.

(NOTE: There are two major changes since the Scoping Letter:

1. Alternative B in the scoping letter has the same name but is not the same alternative - many changes have been made - so do not use that letter or attachment for comments or analysis. (PR# 441)

2. In the Scoping Letter, Alternative B was called the Proposed Action. As described in Section 2.1.2, Alternative C is now the Proposed Action and Alternative B is an alternative that responds to the request for maximum harvest volume. Since Alternatives B, C, and D were all in the Scoping

Letter, it is felt that the comments received would not have changed significantly if a different alternative had been called the proposed action.)

Alternative B is based on Alternative C with all of the changes shown in Table 2.2.3.a. (See also PR# 383c.)

Table 2.2.3.a -- Changes between Alternative C and Alternative B

Dist	Comp	Std	Alt C	Alt B	Reason for change
1	78	2	no treatment	4102, convert to aspen	Whole stand cut for maximum volume in Alt. B, left uncut for foraging area in Alt. C
1	86	15	no treatment	4102	Whole stand cut for maximum volume in Alt. B, left uncut for foraging area, young aspen, future large patch in Alt. C
1	86	16	no treatment	4102	Whole stand cut for maximum volume in Alt. B, left uncut for foraging area, young aspen, future large patch in Alt. C
1	86	22	no treatment	4102	Whole stand cut for maximum volume in Alt. B, left uncut for foraging area, young aspen, future large patch in Alt. C
1	88	9	4115	4102	Whole stand cut for maximum volume in Alt. B, patch cut for HWT benefits in Alt. C
1	88	23	4115	4102	Whole stand cut for maximum volume in Alt. B, patch cut for HWT benefits in Alt. C. In both put 250' buffer around BOMO.
1	88	115	4115	4102	Whole stand cut for maximum volume in Alt. B, patch cut for HWT benefits in Alt. C. In both put 250' buffer around BOMO.
1	118	3	no treatment	4117, scarify, plant JP, fuels treatment	Whole stand cut for maximum volume in Alt. B, left uncut to retain old jack pine in Alt. C
1	123	1	4152, scarify, plant to get component 10 acres jack pine, fuels treatment	4117 scarify, plant to convert to jack pine, fuels treatment	Whole stand cut for maximum volume in Alt. B, 4152 to retain old red pine plus get some young jack pine in Alt. C
1	123	7	4220	4117 scarify, plant red pine, fuels treatment	Clearcut mature red pine in Alt B for maximum volume, thin same red pine in C to retain older trees for future.
1	125	5	4193, convert to northern hardwoods	4102	Regenerate aspen in Alt. B, convert to northern hardwoods to decrease aspen acreage in Alt. C
1	125	11	4193, convert to northern hardwoods	4102	Regenerate aspen in Alt. B, convert to northern hardwoods to decrease aspen acreage in Alt. C
1	128	14	4193, plant WP component	4193	Plant white pine to add more diversity for tribal uses in Alt. C.
1	128	18	4220 but reserve 20 BA higher	4220	Thin lighter in Alt. C for less disturbance - tribal concerns.
1	128	48	no treatment	4102, convert to 95 type	Whole stand cut for maximum volume in Alt. B, left uncut due to tribal concerns, size, riparian, private land in Alt. C
1	129	8	no treatment	4151	Defer due to large patch and tribal concerns with sugar

Dist	Comp	Std	Alt C	Alt B	Reason for change
					maple. 250' buffer on BOMO in Alt. B
1	129	31	no treatment	4117, scarify	Whole stand cut for maximum volume in Alt. B, left uncut to retain old jack pine in Alt. C
1	129	34	4115	4102	Whole stand cut for maximum volume in Alt. B, patch cut for HWT benefits in Alt. C. In both put 250' buffer around BOMO.
1	129	44	no treatment	4117, scarify, plant JP, fuels treatment	Whole stand cut for maximum volume in Alt. B, left uncut to retain old jack pine in Alt. C
1	129	54	4220	4117 scarify, plant red pine, fuels treatment	Clearcut mature red pine in Alt B for maximum volume, thin same red pine in C to retain older trees for future.
1	129	102	4220	4117 scarify, plant red pine, fuels treatment	Clearcut mature red pine in Alt B for maximum volume, thin same red pine in C to retain older trees for future.
1	130	44	no treatment	4117, scarify	Whole stand cut for maximum volume in Alt. B, left uncut to retain old jack pine in Alt. C
1	130	61	no treatment	4117, scarify, plant JP, fuels treatment	Whole stand cut for maximum volume in Alt. B, left uncut to retain old jack pine in Alt. C
1	132	13	4220	4117 scarify, plant red pine, fuels treatment	Clearcut mature red pine in Alt B for maximum volume, thin same red pine in C to retain older trees for future.
1	132	70	no treatment	4117, scarify, plant JP, fuels treatment	Whole stand cut for maximum volume in Alt. B, left uncut to retain old jack pine in Alt. C
1	133	5	4220	4117 scarify, plant red pine, fuels treatment	Clearcut mature red pine in Alt B for maximum volume, thin same red pine in C to retain older trees for future.
1	133	7	4220	4117 scarify, plant red pine, fuels treatment	Clearcut mature red pine in Alt B for maximum volume, thin same red pine in C to retain older trees for future.
1	133	60	4220	4117 scarify, plant red pine, fuels treatment	Clearcut mature red pine in Alt B for maximum volume, thin same red pine in C to retain older trees for future.
1	137	2	4220 for WUI but reserve 20 BA higher	4220 for WUI	Thinning for fuels reduction. Alt. C is to be less noticeable and less disturbance of tribal uses.
1	137	7	4220 for WUI but reserve 20 BA higher	4220 for WUI	Thinning for fuels reduction. Alt. C is to be less noticeable and less disturbance of tribal uses.
1	137	8	4220 for WUI but reserve 20 BA higher	4220 for WUI	Thinning for fuels reduction. Alt. C is to be less noticeable and less disturbance of tribal uses.
1	137	52	4220 for WUI but reserve 20 BA higher	4220 for WUI	Thinning for fuels reduction. Alt. C is to be less noticeable and less disturbance of tribal uses.
1	137	57	4220 for WUI but reserve 20 BA higher	4220 for WUI	Thinning for fuels reduction. Alt. C is to be less noticeable and less disturbance of tribal uses.
1	138	2	4220	4117 scarify, plant red pine, fuels treatment	Clearcut mature red pine in Alt B for maximum volume, thin same red pine in C to retain older trees for future.
1	138	16	4220	4117 scarify, plant red pine, fuels treatment	Clearcut mature red pine in Alt B for maximum volume, thin same red pine in C to retain older trees for future.
1	140	11	4220 but reserve 20 BA higher	4220	Thin lighter in Alt. C for less disturbance - tribal concerns.
2	11	7	4220	4117 scarify, plant red pine, fuels treatment	Clearcut mature red pine in Alt B for maximum volume, thin same red pine in C to retain older trees for future.
2	11	22	4220	4117 scarify, plant red	Clearcut mature red pine in Alt B for maximum volume,

Dist	Comp	Std	Alt C	Alt B	Reason for change
				pine, fuels treatment	thin same red pine in C to retain older trees for future.
2	11	160	4220	4117 scarify, plant red pine, fuels treatment	Clearcut mature red pine in Alt B for maximum volume, thin same red pine in C to retain older trees for future.
2	12	7	4152, groups only	4152 with thinning	Plant WP component in both. Alt. C has less disturbance to traditional uses.
2	12	12	4152, groups only	4152 with thinning	Plant WP component in both. Alt. C has less disturbance to traditional uses.
2	12	65	4152, groups only	4152 with thinning	Plant WP component in both. Alt. C has less disturbance to traditional uses.
2	13	18	4152, groups only	4152 with thinning	Plant WP component in both. Alt. C has less disturbance to traditional uses.
2	13	25	4152, groups only	4152 with thinning	Plant WP component in both. Alt. C has less disturbance to traditional uses.
2	13	27	4152, groups only	4152 with thinning	Plant WP component in both. Alt. C has less disturbance to traditional uses.
2	14	10	4152, groups only	4152 with thinning	Plant WP component in both. Alt. C has less disturbance to traditional uses.
2	14	12	1113 ecosystem burning	no treatment	Ecosystem burning may have the potential to damage residual trees so not included in maximum volume alternative (Alt. B)
2	14	31	1113 ecosystem burning	no treatment	Ecosystem burning may have the potential to damage residual trees so not included in maximum volume alternative (Alt. B)
2	14	39	1113 ecosystem burning	no treatment	Ecosystem burning may have the potential to damage residual trees so not included in maximum volume alternative (Alt. B)
2	14	41	1113 ecosystem burning	no treatment	Ecosystem burning may have the potential to damage residual trees so not included in maximum volume alternative (Alt. B)
2	15	10	1113 ecosystem burning	no treatment	Only included along with ecosystem burning
2	15	14	1113 ecosystem burning	no treatment	Ecosystem burning may have the potential to damage residual trees so not included in maximum volume alternative (Alt. B)
2	15	17	1113 ecosystem burning	no treatment	Ecosystem burning may have the potential to damage residual trees so not included in maximum volume alternative (Alt. B)
2	15	21	1113 ecosystem burning	no treatment	Ecosystem burning may have the potential to damage residual trees so not included in maximum volume alternative (Alt. B)
2	15	31	1113 ecosystem burning	no treatment	Ecosystem burning may have the potential to damage residual trees so not included in maximum volume alternative (Alt. B)
2	15	36	1113 ecosystem burning	no treatment	Only included along with ecosystem burning
2	26	1	defer	4117 scarify, plant red pine, fuels treatment	Clearcut mature red pine in Alt B for maximum volume, defer in Alt. C for no disturbance of traditional uses.
2	26	178	defer	4102	Clearcut in Alt B for maximum volume, defer in Alt. C for no disturbance of traditional uses.

Dist	Comp	Std	Alt C	Alt B	Reason for change
2	34	19	no treatment	4117, scarify, plant JP	Whole stand cut for maximum volume in Alt. B, left uncut to retain old jack pine in Alt. C
2	36	8	4220 but reserve 20 BA higher	4220	Thin lighter in Alt. C for less disturbance - tribal concerns.
2	36	9	4220 but reserve 20 BA higher	4220	Thin lighter in Alt. C for less disturbance - tribal concerns.
2	40	12	no treatment	4117, scarify, plant JP, fuels treatment	Whole stand cut for maximum volume in Alt. B, left uncut to retain old jack pine in Alt. C
2	40	15	no treatment	4131, scarify	Whole stand cut for maximum volume in Alt. B, left uncut due to Owre Tract in Alt. C
2	42	10	no treatment	4117, scarify, plant JP	Whole stand cut for maximum volume in Alt. B, left uncut to retain old jack pine in Alt. C

Table 2.2.3.b -- Alternative B

<table>
<tr><th>Treatment/Activity (Alt. B)</th><th>Amount</th></tr>
<tr><td>Timber Sales on about 2,958 acres of National Forest System land of about 36,021 CCF. This would be broken into several smaller sales.

As a result of meeting Forest Plan objectives the project provides timber and forest products; manages timber according to landscape ecosystems and rotation ages established in the Forest Plan; regenerates aspen/birch, etc.; and maintains or enhances many types of wildlife habitats.

There would be follow-up treatment of "activity fuels" to "safe" levels for fire protection in stands that are being thinned, especially in wildland urban interface (WUI) areas like around Pennington and Flora Lake. Activity fuel reduction can be by a combination of piling and burning, chopping, biomass removal, or hand removal. Fuel reduction by burning is preferable where feasible. Several stands by Flora Lake are specifically harvested as a WUI treatment.

Several of the activity fuel "underburns" would also be ecosystem burns that benefit blueberries and similar plants in the stands.</td><td>
<table>
<tr><th>Harvest Type</th><th>Acres</th></tr>
<tr><td>Clearcutting (coppice cut - 4102)</td><td>645</td></tr>
<tr><td>Clearcutting (patch clearcut - 4115)</td><td>62</td></tr>
<tr><td>Clearcutting (clearcut - 4117)</td><td>486</td></tr>
<tr><td>Shelterwood (shelterwood - 4131)</td><td>68</td></tr>
<tr><td>Uneven-aged management (individual tree cut - 4151)</td><td>124</td></tr>
<tr><td>Uneven-aged management (group cut - 4152)</td><td>309</td></tr>
<tr><td>Two-aged management (4193)</td><td>324</td></tr>
<tr><td>Thinning WUI (thin - 4220)</td><td>774</td></tr>
<tr><td>Thinning (thin - 4220)</td><td>139</td></tr>
<tr><td>Sanitation Harvesting (sanitation - 4232)</td><td>27</td></tr>
<tr><td>TOTAL</td><td>2,958</td></tr>
</table>

Fuels Treated: Fuels removal by various methods - 605 acres (466 activity + 139 WUI). Pile and burn fuels - 95 acres. Underburn stands (and some adjacent stands) - 43 acres. Total fuels treated - 743 acres.</td></tr>
<tr><td>Temporary road construction (developed for timber hauling and stand regeneration) and obliteration (closed and revegetated, per Forest Plan direction). System road reconstruction for timber sales and recreation, as needed.</td><td>About 7 roads, totaling about 0.65 miles of temporary road construction. Various access roads would be upgraded as necessary to make them usable for the timber sale. When the proposed treatment is completed, the temporary roads</td></tr>
</table>

<table>
<tr><th>Treatment/Activity (Alt. B)</th><th>Amount</th></tr>
<tr><td></td><td>are obliterated.</td></tr>
<tr><td>Regeneration of stands cut in timber sales

Regenerate the harvested stands with the desired species. Increases some "under-represented" species by converting other forest types through planting and selective cutting or by adding a component of other species by underplanting (planting under the residual tree canopy).</td><td>
<table>
<tr><th>Site Preparation Treatment</th><th>Acres</th></tr>
<tr><td>Site Prep - mechanical scarification or burning for planting.</td><td>514</td></tr>
<tr><td>Site Prep - mechanical scarification for natural regeneration.</td><td>58</td></tr>
<tr><th>Reforestation Treatment</th><th>Acres</th></tr>
<tr><td>Planting harvested stands</td><td>492</td></tr>
</table>

Based on meeting Forest Plan LE objectives, there would be numerous changes in forest types due to the timber sale, to opening conversion, and natural changes. ALL CONVERSIONS ARE INCLUDED HERE (harvest and non-harvest):
<table>
<tr><th>Forest Types</th><th>Acres of Types Changed</th></tr>
<tr><td>Red pine to Jack Pine</td><td>69</td></tr>
<tr><td>Fir to Aspen/spruce</td><td>27</td></tr>
<tr><td>Ash to Aspen</td><td>29</td></tr>
<tr><td>Aspen to Jack Pine</td><td>16</td></tr>
<tr><td>Aspen/spruce to Red Pine</td><td>5</td></tr>
<tr><td>Aspen to RPWP</td><td>3</td></tr>
<tr><td>Aspen/spruce to White Pine</td><td>0</td></tr>
<tr><td>Aspen to White pine/Red Pine</td><td>17</td></tr>
<tr><td>Aspen to Oak</td><td>61</td></tr>
<tr><td>Aspen to Northern Hardwoods</td><td>271</td></tr>
<tr><td>Aspen/spruce to Northern Hardwood</td><td>13</td></tr>
<tr><td>Aspen/spruce to White Spruce</td><td>11</td></tr>
<tr><td>Paper Birch to Jack Pine/Red Pine</td><td>8</td></tr>
<tr><td>Paper Birch to Red Pine</td><td>6</td></tr>
<tr><td>Paper Birch to Northern Hardwoods</td><td>124</td></tr>
<tr><td>Paper Birch to Aspen</td><td>16</td></tr>
<tr><td>Upland Opening to Aspen</td><td>18</td></tr>
<tr><td>Upland Opening to ash</td><td>3</td></tr>
<tr><td>Upland Opening to Northern Hardwoods</td><td>27</td></tr>
<tr><td>Upland Opening to White Pine</td><td>6</td></tr>
<tr><td>Upland Opening to White Pine/Fruiting Shrubs</td><td>2</td></tr>
<tr><td>Upland Opening to White Pine/White Spruce</td><td>1</td></tr>
<tr><td>Upland Opening to Jack Pine</td><td>7</td></tr>
<tr><td>Upland Opening to Jack pine/Red pine</td><td>2</td></tr>
<tr><td>Upland Opening to Red Pine/Jack Pine/White Spruce</td><td>5</td></tr>
<tr><td>Upland Opening to Red Pine</td><td>1</td></tr>
<tr><td>Upland Opening to White Pine/Red Pine</td><td>2</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Treatment/Activity (Alt. B)</th><th>Amount</th></tr>
<tr><td></td><td>
<table>
<tr><td>Upland Opening to Fruiting Shrubs</td><td>2</td></tr>
<tr><td>Upland Opening to Tamarack</td><td>1</td></tr>
<tr><td>Upland Opening to Tamarack/Elm/Oak</td><td>6</td></tr>
<tr><td>Upland Opening to Tamarack/Elm/Oak/fruiting shrubs</td><td>1</td></tr>
<tr><td>Upland Opening to Tamarack/Elm/Oak/WP</td><td>2</td></tr>
<tr><td>Upland Opening to WS/TA</td><td>4</td></tr>
<tr><td>Upland Opening to White Spruce/fruiting shrubs</td><td>0</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Add a Component of White Pine in other forest types</td><td>12</td></tr>
<tr><td>Add a Component of White Pine in other forest types after sale</td><td>49</td></tr>
<tr><td>Add a Component of Red pine/Jack pine in other forest types after sale</td><td>5</td></tr>
<tr><td>Add a Component of Jack pine in other forest types after sale</td><td>0</td></tr>
</table>
</td></tr>
<tr><td>Precommercial treatments including: Release and precommercial thinning to make planted trees free-to-grow and also to leave a diversity of other species. Application of animal repellant or bud caps to decrease browsing damage to white pine and jack pine (animal damage control = ADC). Pruning is not included in this project because it is at least 8 years after planting.</td><td>
<table>
<tr><th>Treatment</th><th>New</th></tr>
<tr><td>Release</td><td>590</td></tr>
<tr><td>Animal Damage Control</td><td>273</td></tr>
<tr><td>TOTAL TSI</td><td>863</td></tr>
</table>
</td></tr>
<tr><td>Riparian planting: There are some lakeshores and river banks where it would be good to increase the future amount of white pine for eagle nest trees and for diversity.</td><td>Total of 51 acres: White pine - 45 acres. White pine/white spruce - 1 acre. Red pine/jack pine - 5 acres. (Site Prep included above.)</td></tr>
<tr><td>Ecosystem Burning: There are several large old red pine (and white pine) stands that would benefit from underburning to reduce hazel and diversify/reinvigorate the understory plants, including blueberries. Not related to timber harvesting stands.</td><td>None being done in Alt. B due to potential damage to timber.</td></tr>
<tr><td>Wildlife Opening Improvement - keep existing, desirable openings in an open grass/forb condition with only scattered trees or shrubs that provide valuable forage benefits, e.g. ruffed grouse habitat. Treatments include bush-hogging and hand cutting, with prescribed burning on some of the drier and sandier sites.</td><td>142 acres in 80 openings in the KRM EA area.</td></tr>
<tr><td>Wildlife Opening Revegetation - there are several openings that are better managed as part of the adjacent timber stands. Some of these have difficult access. Some are in locations that are not receiving large amounts of social use.

Many are planted with conifers to return them to a tree cover that is compatible with the adjacent stands, especially white pine, which would also help to meet LE objectives for species composition and possibly riparian function in some stands/locations.</td><td>24 openings (35 acres) would be revegetated by planting (sometimes with mechanical scarification (5 acres of 4470)) a combination of white spruce, white pine, red pine, jack pine, tamarack, elm, oak, and fruiting shrubs where the predominant species are white pine (8 acres), white spruce (4 acres), red pine (6 acres), jack pine (7 acre), fruiting shrubs (2 acres), and tamarack (10 acres). White spruce, tamarack, oak, and elm are favored where access for future TSI is most difficult. Spading in about 10 large white pine rather than planting seedlings is favored where access is good. (Conversion included above.)</td></tr>
<tr><td>Wildlife Opening Natural Revegetation - there are several openings that are in northern hardwood, sugar maple, or oak</td><td>40 openings would be revegetated by natural seeding or root suckering of the adjacent forest type on about 48 acres</td></tr>
</table>

Treatment/Activity (Alt. B)	Amount
stands where they would not naturally occur very commonly and some stands in other undesirable locations.	to northern hardwoods (27 acres), aspen (18 acres), ash (3 acres), and jack pine (1 acre) (conversion included above).
Improvement of the Andrusia Lake Boat Landing with a new off-site parking lot north of the highway to the east to safely handle the amount of use it receives so there is parking along the main roads.	Construct a 2 acre overflow parking lot in 2-36-5, about 200 feet east of the existing lot.
The Windigo Portage on Star Island has inadequate toilet facilities (3315).	Construct a new toilet near the portage (in 2-44-8).
The road leading to the canoe access on the northwest side of Pimushe Lake is too rutted for passenger car access.	Upgrade the road to passenger car access by filling mud holes and graveling soft spots (FR 3451).
Bass Lake should be maintained as a carry-in access lake. The Gilfallen area needs to have orchids protected.	Close the access road from the south that is being used by OHVs to access the lake and to do cross-country travel (starts in 1-83-19) (FR 2091A).
The parking lot at the Winnie Boat Landing in the campground is too small for the amount of use it receives so there is parking along the main roads.	Expand the boat landing parking lot by extending it into the north part of the campground (in 2-15-32).
There is a former gravel (sand) pit that is no longer needed and has a few non-native invasive plants (NNIP).	Rehabilitate the gravel pit in 1-86-128 by leveling the soil and seeding a mixture of native plants. The NNIP will be handled under the Forest-wide NNIP Management EA.
The boat landing at Big Lake is not of adequate size for the amount of use it receives so there is parking along the main roads.	Preferably expand the parking lot onto the upland by the gravel road, however, if necessary fill the wetland in the center of the landing to allow more parking.

Table 2.2.3.c - Alternative B Harvest Acres by Forest Type and General Prescription

Forest Type	Coppice (4102)	Clearcut - Patch (4115)	Clearcut (4117)	Shelter wood (4131)	Single Tree Sel. (4151)	Group Selection (4152)	Shelter (UAM) (4193)	Thinning (4220)	Salvage (4232)	Total Acres
Jack Pine (1)	0	0	81	0	0	0	0	139	0	220
Red Pine (2)	0	0	351	0	0	0	3	632	0	986
White Pine (3)	0	0	0	0	0	0	0	7	0	7
Fir/Spruce (11)	27	0	0	0	0	0	0	0	0	27
White spruce (16)	0	0	0	0	0	0	0	58	0	58
Black Ash (71)	29	0	0	0	0	0	0	11	0	40
Sugar maple (82) & Mixed N. Hdwd (89)	0	0	0	0	58	132	101	0	0	291
Aspen (91, 95)	573	62	47	0	66	119	161	53	0	1081
Paper Birch (92)	16	0	8	68	0	57	59	14	27	249
Totals	645	62	487	68	124	308	324	914	27	2959

Table 2.2.3.d - Alternative B Conversions by Forest Type, Harvest Type, and Future Type *

Forest Type	Coppice 4102	Clearcut 4117	Shelter wood 4131	Single tree selection 4151	Group Selection 4152	Shelter UAM 4193	Thinning 4220	Component Only	Total Converted Acres	Total Component Acres
Red Pine (2)	0	69 JP	0	0	0	0	0	10 comp JP in 4152	69	10
Fir/Spruce (11)	27 095 type	0	0	0	0	0	0	0	27	0
Ash (71)	29 A	0	0	0	0	0	0	0	29	0
Sugar Maple (82)	0	0	0	0	0	0	0	10 comp WP	0	10
Mix N. Hdwd (89)	0	0	0	0	0	0	0	17 comp WP in 4152	0	17
Aspen (91)	0	16 JP 3 RPWP 17 WPRP	0	66 MNH	26 oak 94 MNH	35 oak 68 MNH	43 MNH	1 comp WP in 4102 15 comp WP in 4152 3 comp WP in 4193 5 comp RPJP in 4152	368	24
Aspen/Spruce (95)	0	11 WS	0	0	0	8 MNH	5 RP 5 MNH	2 comp WP	29	2
Paper Birch (92)	16 A	8 JPRP	0	0	57 MNH	59 MNH	6 RP 8 MNH	4comp WP in 4131 3 comp WP in 4193 9 comp WP in 4152	154	16
WL Openings	0	0	0	0	0	0	0	7 JP 2 JPRP 1 RP 5 RPJPWS 1 Tama 9 Tama +	91	0

Forest Type	Coppice 4102	Clearcut 4117	Shelter wood 4131	Single tree selection 4151	Group Selection 4152	Shelter UAM 4193	Thinning 4220	Component Only	Total Converted Acres	Total Component Acres
								6 WP 5 WP + 4 WSTama 3 ash 27 MNH 18 A 2 fruiting shrub		
Total Convert	72	124	0	66	177	170	67	155	767	79

*Abbreviations in the table are A - aspen, WS - white spruce, PB - paper birch, MNH - mixed northern hardwoods, JP - jack pine, RP - red pine, Tama - tamarack, and WP - white pine.

Numbers are the affected acreages.

"comp" means a component of the species is underplanted in the stand.

2.2.4 - ALTERNATIVE D

Alternative D puts an emphasis on providing traditionally gathered resources. Alternative D is a more "light on the land" (lower harvest volume) approach to management. This alternative responds to concerns raised by the Leech Lake Band of Ojibwe (Issue #1). Harvest treatments in many stands in Alternative C have been deferred or modified to be less intensive and remove less volume; because of their proximity to communities or because of their high use by tribal members. The alternative includes more planting of wildlife openings for fruiting shrubs, less temporary roads, and dropping Andrusia Parking Lot. This still meets the Purpose and Need of the EA by moving toward goals in the Forest Plan and the intent of Forest Plan guidance. (PR# 441)

The District Ranger and the ID Team reviewed Alternative C in light of the existing conditions in the project area and Forest Plan LE direction to determine if there were other ways to manage the stands and meet or come closer to Forest Plan LE direction for species composition. Alternative D follows the guidance of the 2004 Forest Plan, meets management area direction and desired conditions for the Forest Plan, and meets the Purpose and Need.

During the scoping period, there were public comments that changed the prescriptions and activities. This resulted in Alternative D as shown here. Changes made to the alternative are similar in nature to activities already in the alternative, so the public had a chance to comment on this type of activity and will have a further chance to look at the specific changes during the 30-day Public Comment Period. These changes are all spelled out in detail in Section 2.1.7 in narrative and tabular form. The only accurate, current maps for alternatives have "(New 2010)" in their titles. If an activity map does not have this wording, then it is old and no longer accurate.

(NOTE: There is one major change to Alternative D since the Scoping Letter:

1. Alternative D in the scoping letter has the same name but is not the same alternative - many changes have been made - so do not use that letter or attachment for comments or analysis. (PR# 441))

Alternative D is based on Alternative C with all of the changes shown in Table 2.2.4.a. (See also PR# 383d.)

Table 2.2.4.a -- Changes between Alternative C and Alternative D

Dist	Comp	Std	Alt C	Alt D	Reason for change
1	78	7	4102	no treatment	Defer due to goshawk foraging and young timber
1	78	15	Maintain wildlife opening	Plant wildlife opening, WS, fruiting shrubs	Access, size, not needed, better to have conifers and fruiting shrubs
1	78	29	4102	no treatment	Defer due to goshawk foraging, wetland, and narrow stand
1	78	55	4102	no treatment	Defer due to goshawk foraging and wetland
1	78	68	Maintain wildlife opening	Plant wildlife opening, WS, fruiting shrubs	Access, size, not needed, better to have conifers and fruiting shrubs
1	79	39	Maintain wildlife opening	Plant wildlife opening, WS, fruiting shrubs	Access, size, not needed, better to have conifers and fruiting shrubs
1	79	63	Maintain wildlife opening	Plant wildlife opening, WS, fruiting shrubs	Access, size, not needed, better to have conifers and fruiting shrubs
1	86	27	4102	no treatment	Defer due to young aspen
1	86	56	4193	no treatment	Defer due to tribal concerns with sugar maple
1	88	9	4115	no treatment	Defer due to large patch
1	88	20	4102	no treatment	Defer due to large patch and old aspen
1	88	23	4115	no treatment	Defer due to large patch and old aspen and riparian
1	88	112	Temporary road	no treatment	Road not needed since harvested stand was deferred
1	88	114	4102	no treatment	Defer due to large patch and old aspen
1	88	115	4115	no treatment	Defer due to large patch and old aspen

Dist	Comp	Std	Alt C	Alt D	Reason for change
1	125	5	4193, convert to northern hardwoods	no treatment	Defer to maintain a diversity of forest type species
1	125	8	4193, convert to northern hardwoods	no treatment	Defer to maintain a diversity of forest type species
1	125	11	4193, convert to northern hardwoods	no treatment	Defer to maintain a diversity of forest type species
1	127	43	4102	4117, scarify, plant white pine	To reduce aspen and increase white pine
1	129	36	4102	no treatment	Defer due to old aspen
1	129	81	4102	no treatment	Defer due to large patch and old aspen
1	129	87	4102	no treatment	Defer due to tribal concerns
1	129	110	4102	no treatment	Defer due to future large patch and old aspen
1	130	18	4193	no treatment	Defer due to tribal concerns with sugar maple
1	132	30	4102	no treatment	Defer due to future large patch
1	132	65	4102	no treatment	Defer due to future large patch
1	133	15	4220	no treatment	Defer due to tribal concerns with black ash
1	133	19	4152	no treatment	Defer due to tribal concerns with sugar maple
1	133	52	4102	no treatment	Defer due to small size, tribal concerns, and dropping adjacent harvesting
1	137	2	4220 for WUI	Deferred	Defer to respect tribal uses.
1	137	7	4220 for WUI	Deferred	Defer to respect tribal uses.
1	137	8	4220 for WUI	Deferred	Defer to respect tribal uses.
1	137	52	4220 for WUI	Deferred	Defer to respect tribal uses.
1	137	57	4220 for WUI	Deferred	Defer to respect tribal uses.
1	138	8	4117, scarify, plant RP, fuels treatment	no treatment	Defer due to old aspen
1	140	3	4232	no treatment	Defer due to tribal concerns
1	140	11	4220 light	Deferred	Defer to respect tribal uses.
1	140	13	4131, scarify, plant component 4 acres white pine	no treatment	Defer due to tribal concerns
2	9	1	4102, convert to 95 type	no treatment	Defer due to future large patch and osprey
2	9	112	4102, convert to 95 type	no treatment	Defer due to future large patch and osprey
2	11	7	4220	no treatment	Defer due to large old red pine
2	12	7	4152, riparian plant component 8 acres white pine	no treatment	Defer due to river, visuals, tribal concerns
2	12	12	4152, riparian plant component 9 acres white pine	no treatment	Defer due to river, visuals, tribal concerns
2	12	65	4152, riparian plant component 9 acres white pine	no treatment	Defer due to river, visuals, tribal concerns
2	12	17	Temporary road	no treatment	Road not needed since harvested stand was deferred
2	13	18	4152, riparian plant component 9 acres white pine	no treatment	Defer due to river, visuals, tribal concerns
2	13	25	4152, riparian plant component 9 acres	no treatment	Defer due to river, visuals, tribal concerns

Dist	Comp	Std	Alt C	Alt D	Reason for change
			white pine		
2	13	27	4152, riparian plant component 9 acres white pine	no treatment	Defer due to river, visuals, tribal concerns
2	14	1	4193, convert to oak	no treatment	Defer due to large patch
2	14	8	4220	no treatment	Defer to respect tribal concerns
2	14	10	4152, riparian plant component 9 acres white pine	no treatment	Defer due to river, visuals, tribal concerns
2	15	29	4220	no treatment	Defer to respect tribal concerns
2	34	29	4193	no treatment	Defer to respect tribal concerns
2	36	5	Andrusia Boat Landing parking lot	no new parking lot	To be able to analyze the effects of no new parking lot
2	36	27	4117	no treatment	Defer to respect tribal concerns
2	36	55	4117	no treatment	Defer to respect tribal concerns

Table 2.2.4.b -- Alternative D

<table>
<tr><th>Treatment/Activity (Alt. D)</th><th>Amount</th></tr>
<tr><td>Timber Sales on about 1,544 acres of National Forest System land of about 14,679 CCF. This would be broken into several smaller sales.

As a result of meeting Forest Plan objectives the project provides timber and forest products; manages timber according to landscape ecosystems and rotation ages established in the Forest Plan; regenerates aspen/birch, etc.; and maintains or enhances many types of wildlife habitats.

There would be follow-up treatment of "activity fuels" to "safe" levels for fire protection in stands that are being thinned, especially in wildland urban interface (WUI) areas like around Pennington and Flora Lake. Activity fuel reduction can be by a combination of piling and burning, chopping, biomass removal, or hand removal. Fuel reduction by burning is preferable where feasible.

Several of the activity fuels "underburns" would also be ecosystem burns that benefit blueberries and similar plants in the stands.</td><td>
<table>
<tr><th>Harvest Type</th><th>Acres</th></tr>
<tr><td>Clearcutting (coppice cut - 4102)</td><td>116</td></tr>
<tr><td>Clearcutting (patch clearcut - 4115)</td><td>68</td></tr>
<tr><td>Clearcutting (clearcut - 4117)</td><td>41</td></tr>
<tr><td>Shelterwood (shelterwood - 4131)</td><td>25</td></tr>
<tr><td>Uneven-aged management (individual tree cut - 4151)</td><td>89</td></tr>
<tr><td>Uneven-aged management (group cut - 4152)</td><td>114</td></tr>
<tr><td>Two-aged management (4193)</td><td>193</td></tr>
<tr><td>Thinning WUI (thin - 4220)</td><td>0</td></tr>
<tr><td>Thinning (thin - 4220)</td><td>898</td></tr>
<tr><td>Sanitation Harvesting (sanitation - 4232)</td><td>0</td></tr>
<tr><td>TOTAL</td><td>1,544</td></tr>
</table>

Fuels Treated: Fuels removal by various methods - 133 acres (133 activity + 0 WUI). Pile and burn fuels - 18 acres. Underburn stands (and some adjacent stands) - 169 acres. Total fuels treated - 320 acres.</td></tr>
<tr><td>Temporary road construction (developed for timber hauling and stand regeneration) and obliteration (closed and revegetated, per Forest Plan direction). System road reconstruction for timber sales and recreation, as needed.</td><td>About 5 roads, totaling about 0.45 miles of temporary road construction. Various access roads would be upgraded as necessary to make them usable for the timber sale. When the proposed treatment is completed, the temporary roads are obliterated.</td></tr>
</table>

Treatment/Activity (Alt. D)	Amount
Regeneration of stands **cut in timber sales** Regenerate the harvested stands with the desired species. Increases some "under-represented" species by converting other forest types through planting and selective cutting or by adding a component of other species by underplanting (planting under the residual tree canopy) (planting under the residual tree canopy).	

Site Preparation Treatment	**Acres**
Site Prep - mechanical scarification or burning for planting.	71
Site Prep - mechanical scarification for natural regeneration.	25
Reforestation Treatment	**Acres**
Planting	65

Based on meeting Forest Plan LE objectives, there would be numerous changes in forest types due to the timber sale, to opening conversion, and natural changes. ALL CONVERSIONS ARE INCLUDED HERE (harvest and non-harvest):

Forest Types	**Acres of Types Changed**
Red pine to Jack Pine	4
Fir to Aspen	0
Ash to Aspen	3
Aspen to Jack Pine	0
Aspen/spruce to Red Pine	5
Aspen to Red pine/White pine	3
Aspen/spruce to White Pine	6
Aspen to White pine/Red Pine	17
Aspen to Oak	27
Aspen to Northern Hardwoods	201
Aspen/spruce to Northern Hardwood	13
Aspen/spruce to White Spruce	11
Paper Birch to Jack Pine/Red Pine	0
Paper Birch to Red Pine	6
Paper Birch to Northern Hardwoods	19
Paper Birch to Aspen	0
Upland Opening to Aspen	18
Upland Opening to ash	3
Upland Opening to Northern Hardwoods	27
Upland Opening to White Pine	6
Upland Opening to White Pine/Fruiting Shrubs	2
Upland Opening to White Pine/White Spruce	1
Upland Opening to Jack Pine	7
Upland Opening to Jack pine/Red pine	2
Upland Opening to Red Pine/Jack Pine/White Spruce	5
Upland Opening to Red Pine	1
Upland Opening to White Pine/Red Pine	2

<table>
<tr><th>Treatment/Activity (Alt. D)</th><th>Amount</th></tr>
<tr><td></td><td>
<table>
<tr><td>Upland Opening to Fruiting Shrubs</td><td>2</td></tr>
<tr><td>Upland Opening to Tamarack</td><td>1</td></tr>
<tr><td>Upland Opening to Tamarack/Elm/Oak</td><td>6</td></tr>
<tr><td>Upland Opening to Tamarack/Elm/Oak/fruiting shrubs</td><td>1</td></tr>
<tr><td>Upland Opening to Tamarack/Elm/Oak/WP</td><td>2</td></tr>
<tr><td>Upland Opening to WS/TA</td><td>4</td></tr>
<tr><td>Upland Opening to White Spruce/fruiting shrubs</td><td>2</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Add a Component of White Pine in other forest types</td><td>12</td></tr>
<tr><td>Add a Component of White Pine in other forest types after sale</td><td>14</td></tr>
<tr><td>Add a Component of Red pine/Jack pine in other forest types after sale</td><td>0</td></tr>
<tr><td>Add a Component of Jack pine in other forest types after sale</td><td>10</td></tr>
</table>
</td></tr>
<tr><td>Precommercial treatments including: Release and precommercial thinning to make planted trees free-to-grow and also to leave a diversity of other species. Application of animal repellant or bud caps to decrease browsing damage to white pine and jack pine (animal damage control = ADC). Pruning is not included in this project because it is at least 8 years after planting.</td><td>
<table>
<tr><th>Treatment</th><th>New</th></tr>
<tr><td>Release</td><td>117</td></tr>
<tr><td>Animal Damage Control</td><td>96</td></tr>
<tr><td>TOTAL TSI</td><td>213</td></tr>
</table>
</td></tr>
<tr><td>Riparian planting: There are some lakeshores and river banks where it would be good to increase the future amount of white pine for eagle nest trees and for diversity.</td><td>Total of 15 acres: White pine - 14 acres. White pine/white spruce - 1 acre. Site preparation in table above.</td></tr>
<tr><td>Ecosystem Burning: There are several large old red pine (and white pine) stands that would benefit from underburning to reduce hazel and diversify/reinvigorate the understory plants, including blueberries. Not related to timber harvesting stands.</td><td>About 278 acres of understory burning in two large blocks.</td></tr>
<tr><td>Wildlife Opening Improvement - keep existing, desirable openings in an open grass/forb condition with only scattered trees or shrubs that provide valuable forage benefits, e.g. ruffed grouse habitat. Treatments include bush-hogging and hand cutting, with prescribed burning on some of the drier and sandier sites.</td><td>140 acres in 76 openings in the KRM EA area.</td></tr>
<tr><td>Wildlife Opening Revegetation - there are several openings that are better managed as part of the adjacent timber stands. Some of these have difficult access. Some are in locations that are not receiving large amounts of social use.

Many are planted with conifers to return them to a tree cover that is compatible with the adjacent stands, especially white pine, which would also help to meet LE objectives for species composition and possibly riparian function in some stands/locations.</td><td>28 openings (37 acres) would be revegetated by planting (sometimes with mechanical scarification (5 acres of 4470)) a combination of white spruce, white pine, red pine, jack pine, tamarack, elm, oak, and fruiting shrubs where the predominant species are white pine (8 acres), white spruce (6 acres), red pine (6 acres), jack pine (7 acre), fruiting shrubs (2 acres), and tamarack (10 acres). White spruce, tamarack, oak, and elm are favored where access for future TSI is most difficult. Spading in about 10 large white pine rather than planting seedlings is favored where access is good. (Conversion included above.)</td></tr>
<tr><td>Wildlife Opening Natural Revegetation - there are several openings that are in northern hardwood, sugar maple, or oak</td><td>40 openings would be revegetated by natural seeding or root suckering of the adjacent forest type on about 48 acres</td></tr>
</table>

Treatment/Activity (Alt. D)	Amount
stands where they would not naturally occur very commonly and some stands in other undesirable locations.	to northern hardwoods (27 acres), aspen (18 acres), ash (3 acres), and jack pine (1 acre) (conversion included above).
Improvement of the Andrusia Lake Boat Landing with a new off-site parking lot north of the highway to the east to safely handle the amount of use it receives so there is parking along the main roads.	0 -- not included in Alt. D to see effects.
The Windigo Portage on Star Island has inadequate toilet facilities.	Construct a new toilet near the portage (in 2-44-8).
The road leading to the canoe access on the northwest side of Pimushe Lake is too rutted for passenger car access.	Upgrade the road to passenger car access by filling mud holes and graveling soft spots (FR 3451).
Bass Lake should be maintained as a carry-in access lake. The Gilfallen area needs to have orchids protected.	Close the access road from the south that is being used by OHVs to access the lake and to do cross-country travel (starts in 1-83-19) (FR 2091A).
The parking lot at the Winnie Boat Landing in the campground is too small for the amount of use it receives so there is parking along the main roads.	Expand the boat landing parking lot by extending it into the north part of the campground (in 2-15-32).
There is a former gravel (sand) pit that is no longer needed and has a few non-native invasive plants (NNIP).	Rehabilitate the gravel pit in 1-86-128 by leveling the soil and seeding a mixture of native plants. The NNIP will be handled under the Forest-wide NNIP Management EA.
The boat landing at Big Lake is not of adequate size for the amount of use it receives so there is parking along the main roads.	Preferably expand the parking lot onto the upland by the gravel road, however, if necessary fill the wetland in the center of the landing to allow more parking.

Table 2.2.4.c - Alternative D Harvest Acres by Forest Type and General Prescription

Forest Type	Coppice (4102)	Clearcut - Patch (4115)	Clearcut (4117)	Shelter wood (4131)	Single Tree Sel. (4151)	Group Selection (4152)	Shelter (UAM) (4193)	Thinning (4220)	Salvage (4232)	Total Acres
Jack Pine (1)	0	0	0	0	0	0	0	0	0	0
Red Pine (2)	0	0	4	0	0	65	3	775	0	847
White Pine (3)	0	0	0	0	0	0	0	7	0	7
Fir/Spruce (11)	0	0	0	0	0	0	0	0	0	0
White spruce (16)	0	0	0	0	0	0	0	58	0	58
Black Ash (71)	3	0	0	0	0	0	0	0	0	3
Sugar maple (82) & Mix N. Hdwd (89)	0	0	0	0	23	0	45	0	0	68
Aspen (91, 95)	113	68	37	0	66	49	127	53	0	513
Paper Birch (92)	0	0	0	25	0	0	19	6	0	50
Totals	116	68	41	25	89	114	194	899	0	1546

Table 2.2.4.d - Alternative D Conversions by Forest Type, Harvest Type, and Future Type *

Forest Type	Coppice 4102	Clearcut 4117	Shelter wood 4131	Single tree selection 4151	Group Selection 4152	Shelter UAM 4193	Thinning 4220	Component Only	Total Converted Acres	Total Component Acres
Red Pine (2)	0	4 JP	0	0	0	0	0	10 comp JP in 4152	4	10
Fir/Spruce (11)	0	0	0	0	0	0	0	0	0	0
Ash (71)	3 A	0	0	0	0	0	0	0	3	0
Sugar Maple (82)	0	0	0	0	0	0	0	10 comp WP	0	10
Mix N. Hdwd (89)	0	0	0	0	0	0	0	0	0	0
Aspen (91)	0	3 RPWP 17 WPRP	0	66 MNH	49 MNH	27 oak 42 MNH	43 MNH	1 comp WP in 4102 10 comp WP in 4152 3 comp WP in 4193	247	14
Aspen/Spruce (95)	0	11 WS 6 WP	0	0	0	8 MNH	5 RP 5 MNH	2 comp WP	35	2
Paper Birch (92)	0	0	0	0	0	19 MNH	6 RP	0	19	0
WL Openings	0	0	0	0	0	0	0	7 JP 2 JPRP 1 RP 5 RPJPWS 1 Tama 9 Tama + 6 WP 5 WP +	93	0

Forest Type	Coppice 4102	Clearcut 4117	Shelter wood 4131	Single tree selection 4151	Group Selection 4152	Shelter UAM 4193	Thinning 4220	Component Only	Total Converted Acres	Total Component Acres
								4 WSTama 3 ash 27 MNH 18 A 2 fruiting shrub 2 WS fruiting shrub		
Total Convert	29	65	0	66	177	136	67	141	401	36

*Abbreviations in the table are A - aspen, WS - white spruce, PB - paper birch, MNH - mixed northern hardwoods, JP - jack pine, RP - red pine, Tama - tamarack, and WP - white pine.

Numbers are the affected acreages.

"comp" means a component of the species is underplanted in the stand.

2.2.5 - SUMMARY TABLE FOR ALTERNATIVES

SUMMARY TABLE (Kitchi Resource Management EA (KRM) summary as of 05/14/2010)

This is also Appendix I, so the table is deleted here and only found in the appendices section of the EA.

2.3 - MITIGATING MEASURES AND DESIGN FEATURES

Anything incorporated into the actual design of the treatment is not considered a mitigating measure. These items would be part of the prescriptions and called "design features." They include guidance from the Forest Plan, plus guidance and ideas from District personnel, the Interdisciplinary Team, and other authoritative sources. (Specific items that guided the design of individual stands are included in Appendix H of this EA.)

In summary, some of the major design features and special treatments in the prescriptions include:

Specifying types and amounts of reserve trees.
Cutting trees to facilitate operations.
Leaving trees for visual concerns.
Leaving species, patches, or trees for wildlife.
Special treatments for riparian areas.
Specifying season of operation where needed.
Avoiding and protecting heritage resource sites.
Designing harvest units to avoid or protect RFSS.
Giving the LLBO advance notice of harvesting that could affect birch bark or balsam fir bough gathering, preferably before painting the trees.

2.4 DEFINITIONS AND OBJECTIVES OF PROPOSED ACTIVITIES

The definitions of activities within treatments and the objectives of the treatments have been placed in Appendix F: Glossary due to the length of the information. It includes definitions from FACTS and FACTS codes.

2.5 - COMPARISON OF ALTERNATIVES

This section provides a summary of the effects of implementing each alternative. Information in the table is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives. Where there was little or no difference between alternatives, effects may have been left off this chart.

TABLE 2.5.a Approximate Acres/Miles/Sites Impacted on National Forest System Land by KRM EA

	Alt. A	Alt. B	Alt. C	Alt. D
Volume Harvest (est. in CCF)	0	36,021	26,556	14,679
Acres of Clearcutting/Coppice Cutting	0	1,193	488	225
Acres of Shelterwood Cutting	0	68	49	25
Acres of Single Tree Selection Cutting	0	124	89	89
Acres of Group Selection Cutting	0	309	373	114
Acres of Two-Aged Shelterwood (UAM) Cutting	0	324	381	193
Acres of Thinning	0	913	1,172	898
Acres of Sanitation Cutting	0	27	27	0
Acres of Planting harvested stands	0	474	69	41
Acres of Planting Components of conifers in stands	0	18	28	24
Acres of riparian planting	0	51	51	15
Acres of release	0	590	185	117
Acres of animal damage control	0	273	157	96
Acres of fuels reduction - removal	0	605	306	133
Acres of fuels reduction - pile burning	0	95	28	18
Acres of fuels reduction - underburning	0	43	169	169
Acres of ecosystem burning	0	0	278	278
Miles of Temporary Road	0	0.65	0.65	0.45

	Alt. A	Alt. B	Alt. C	Alt. D
Acres of Mechanical Scarification Site Preparation	0	572	145	96
Acres of planting wildlife openings with WP, WS, tama, fruiting shrubs, etc.	0	35	35	37
Acres of maintaining wildlife openings	0	142	142	140
Acres of letting wildlife openings regenerate naturally to mixed northern hardwoods	0	48	48	48
New Andrusia Boat Landing Parking Lot	0	yes	yes	no
New Star Island Toilet	0	yes	yes	yes
Rehabilitate Gravel Pit	0	yes	yes	yes
Upgrade Pimushe Lake Canoe Landing Road	0	yes	yes	yes
Treat Bass Lake access road	0	close	fix/upgrade	close
Enlarge Winnie Boat Landing Parking Lot	0	yes	yes	yes
Enlarge Big Lake Boat Landing Parking Lot	0	yes	yes	yes
	0			
	0			
	0			
Change in acres of jack pine	0	+102	+37	+13
Change in acres of red pine	0	-49	+16	+16
Change in acres of white pine	0	+28	+28	+34
Change in acres of aspen	0	-305	-380	-227
Change in acres of aspen/spruce	0	-2	-29	-35
Change in acres of fir/spruce	0	-27	-24	0
Change in acres of paper birch	0	-154	-138	-25
Change in acres of white spruce	0	+15	+15	+17
Change in acres of mixed northern hardwoods	0	+435	+492	+260
Change in acres of black ash	0	-26	0	0
Change in acres of oak	0	+61	+61	+27
Change in acres of tamarack	0	+10	+10	+10
Change in acres of fruiting shrubs	0	+2	+2	+2
Change in acres of upland openings/wildlife openings	0	-90	-90	-92
Component of white pine planted	0	61	64	26
Component of red pine planted	0	5	5	0
Component of jack pine planted	0	0	10	10

Table 2.5.b Impacts of Alternatives on Selected Indicators for the Issues (not included above)

	Alt. A	Alt. B	Alt. C	Alt. D
Key Issue 1. Harvest Volume:				
Percentage and acreage of harvest treatments that are clearcuts/coppice cuts compared to the Forest Plan goal of 39%.	0%, 0 acres	40%, 1,193 acres	19%, 488 acres	15%, 225 acres
Percentage and acreage of 0-9 year age-class made by treatments.	0%, 0 acres	4.4%, 1,344 acres	2.0%, 620 acres	1.1%, 335 acres
Acres of over mature aspen treated (used >50 years for minimum age for over mature aspen)	0	929 out of 3,367 mature acres	929	492
Percentages of species compositions compared to Forest Plan LE objectives.	Variable - See summary in	Variable - See summary in Section 3.1.4.7	Variable - See summary in Section 3.1.4.7	Variable - See summary in Section 3.1.4.7

	Alt. A	Alt. B	Alt. C	Alt. D
	Section 3.1.4.7 in this EA and tables in Section 3.1.4.7 of the Specialist Report EA (PR# 480)	in this EA and tables in Section 3.1.4.7 of the Specialist Report EA (PR# 480)	in this EA and tables in Section 3.1.4.7 of the Specialist Report EA (PR# 480)	in this EA and tables in Section 3.1.4.7 of the Specialist Report EA (PR# 480)
Key Issue 2. Traditional Resources and Uses:				
Acreage and number of stands in which historic, traditional use is potentially precluded by harvesting.	0 acres, 0 stands	1,329 acres, 73 stands	537 acres, 41 stands	250 acres 19 stands
Acreage and number of stands in which historic, traditional use is potentially undesirably changed by harvesting.	0 acres, 0 stands	1,698 acres, 90 stands	2,044 acres, 104 stands	1,296 acres, 77 stand
Effects of treatments or lack of treatments on traditionally gathered resources.	Variable +-, See Section 3.3.3.3.2	Variable +-, See Section 3.3.3.3.2	Variable +-, See Section 3.3.3.3.2	Variable +-, See Section 3.3.3.3.2
Number of stands deferred, modified, or retained that are mentioned by the LLBO as traditional gathering sites.	31 deferred	2 deferred, 1 modified, 28 retained	5 deferred, 8 modified, 18 retained	24 deferred, 4 modified, 3 retained
Acres of clearcutting changed to other treatments that maintain structure, age, and species composition or that maintain "ecological function" (Comments 37.4 and 40.5).	All deferred	past 49 defer/modify, 337 extra acres red pine clearcutting	past 49 defer/modify, From B modify the 337 red pine, 321 defer, 459 modify	past 49 defer/modify, From C 264 defer
Acres of harvest treatments changed to less intensive methods between alternatives.	No harvest	Baseline	459 acres	459 acres (same as Alt. B)
Acres of harvest treatments deferred between alternatives.	No harvest	Baseline	376 acres	1,035 acres
Acres of mature red pine harvest and type of harvest (Comment 19.3).	0	351 clearcut, 48 other cut	14 clearcut, 369 other cut	4 clearcut, 287 other cut
Acres of harvesting in sugar maple stands (Comment 19.6).	0	291	256	68
Acres of row thinning that decrease diversity (Comment 19.2).	0	771	632	516
Acres of mature jack pine clearcut.	0	81	0	0
Acres treated for increased blueberry production (Comments 5.1, 14.4, and 25.1).	0	342	600	461
Treatments within ¼ mile of tribal lands.	0	37 stands, 398 acres	37 stands, 398 acres but less intensive cutting	25 stands, 113 acres
Non-key: Harvesting, roads, and other vegetation management activities, especially in riparian zones or near wetlands, may cause water				

	Alt. A	Alt. B	Alt. C	Alt. D
quality/visual problems:				
Acres, number of stands, and types of harvesting within 200 feet of riparian areas or wetlands.	0	77	73	19
Acres of RMZ (area within 200 ft. of lakes and streams) disturbed during vegetation management activities.	0	290	259	93
Effects from this harvesting.	None	Minimal but highest	Minimal	Minimal but least
BMP's required to be used to protect water resource in those zones	None	Lower BAs. Down woody debris. Time of year for harvest. Reserve Trees. Filter strips. Stream crossing protection. Water bars(diversions).	Lower BAs. Down woody debris. Time of year for harvest. Reserve Trees. Filter strips. Stream crossing protection. Water bars(diversions)	Lower BAs. Down woody debris. Time of year for harvest. Reserve Trees. Filter strips. Stream crossing protection. Water bars(diversions).
Acres treated for long-lived species in Riparian zones	0	294	290	45
Species planted in riparian zones	0	Plant white pine and red pine (with some mixed jack pine) along with natural northern hardwoods	Plant white pine and red pine (with some mixed jack pine) along with natural northern hardwoods	Plant white pine and red pine (with some mixed jack pine) along with natural northern hardwoods
Percentage of upland in sub-watersheds in young and open condition.	Varies by watershed from 1 to 28%	Varies by watershed from 2 to 28%	Varies by watershed from 1 to 28%	Varies by watershed from 1 to 28%
Non-key: Harvesting near the Mississippi River may negatively affect wild rice:				
Acres of harvesting along the Mississippi River, within 200 feet.	0	33	33	0
Effects on wild rice from this harvesting.	None	None	None	None
Non-key: Management activities can spread non-native invasive plants:				
Acres/types of soil exposure.	No activities, no change.	Disturb 2,959 acres harvesting, 3 parking lots, 7 temp. roads. Enter 18 stands through NNIS ditches.	Disturb 2,581 acres harvesting, 3 parking lots, 7 temp. roads Enter 16 stands through NNIS ditches.	Disturb 1,546 acres harvesting, 2 parking lots, 5 temp. roads Enter 7 stands through NNIS ditches.

	Alt. A	Alt. B	Alt. C	Alt. D
Non-key: Harvest activities may negatively impact habitat for red shoulder hawk, goshawk and other sensitive species:				
Effects to TES and their habitats.				
Red Shouldered hawk - conversions to northern hardwoods	none	middle	most	least
Red Shouldered hawk - uneven-aged mgmt in northern hardwoods is beneficial	none	middle	most	least
Goshawk - acres clearcut in foraging territory - % suitable left	0 - 52 to 62%	233 - 51 to 60%	129 - 51 to 61%	64 - 51 to 62%
General TES	No change	negative due to jack pine clearcutting	positive due to ecosystem burning	positive due to ecosystem burning
Non-key: Excessive clearcutting leads to a lack of diversity:				
Conversions help diversity	None	766 acres	713 acres	407 acres
Planting components helps diversity	None	66 acres	79 acres	36 acres
Planting making more diverse in clearcuts	None	478 acres	74 acres	46 acres
Amount of clearcutting	None	Most	middle	Least
Non-key: Management under the Proposed Action in riparian zones does not meet Forest Plan guidance for long-lived species in riparian areas:				
Activities leaving long-rotation species	0	294	290	45
Activities leaving short-rotation species	0	241	141	42
Non-key: Management in riparian zones is just being done to get more volume:				
See Section 1.6 for discussion of meeting Forest Plan guidance	---	---	---	---
Non-key: Management near wetlands or filling wetlands has negative effects on the wetlands:				
Effects of treatments to wetlands other than RMZs.	None	With BMPs there should be no negative effects.	With BMPs there should be no negative effects.	With BMPs there should be no negative effects.
Non-key: Forest Service land management has effects other than the one prescribed in "prescriptions" or "environmental assessments". The Forest Service prescribes certain activities with certain effects, but does not do the activity properly, does not do what they say, or does not follow through:				
See Section 1.6 for discussion of monitoring.	---	---	---	---
Non-key: Reducing upland aspen cover type				

	Alt. A	Alt. B	Alt. C	Alt. D
acres would have a negative effect on wildlife species that depend on this forest type, particularly Ruffed Grouse.:				
Acres of aspen converted to other forest types.	0	396	396	292
Acres of aspen regenerated to aspen.	0	635	392	187
Impacts on ruffed grouse	Slowly reduced habitat	Lot of new habitat but big clearcuts by hunter walking trails	Best - lot of new habitat and patch cutting by HWT	Least new habitat but patch cutting by HWT
Impact on hunting grouse	Less habitat as stands age out of 0-9 years.	New 0-9 aspen stands, most clearcutting, least patch cutting.	Now 0-9 aspen stands, less clearcutting but most patch cutting.	Least new 0-9 aspen stands, medium patch cutting.
Impact on hunting deer	20% forage, 23% thermal	18% forage, 22% thermal	17% forage, 24% thermal	16% forage, 24% thermal
Impact on hunting woodcock	Decreased young habitat	Minor new 0-9 in riparian	Minor new 0-9 in riparian	Minor new 0-9 in riparian
Non-key: Location of toilet on Star Island may affect cultural and heritage resources. Lack of improved restroom facilities perpetuates ongoing sanitation problems which may increase with increased use:				
Effects from new toilet	No change, sanitation problems continue	Reduced sanitation problems, no visual problem	Same as Alt. B	Same as Alt. B

CHAPTER 3 - ENVIRONMENTAL CONSEQUENCES

This section summarizes the appropriate/relevant physical, biological, and social environment effects on the affected project area and the potential changes to those environments due to implementation of the alternatives. It also presents the scientific and analytical basis for the comparison of alternatives presented in the charts in Section 2.5.

Notes on the analysis: The KRM EA area boundary split many stands into pieces with only parts of them inside the boundary. Where stands proposed for treatment are split, it is assumed that the entire stands would actually be treated, but the acreage used in the analysis is only the part inside. Treated stands that are split include 1-78-15, 1-88-9, 1-106-33, 1-125-1, 1-125-21, 1-126-14, 1-126-17, 1-129-26, 1-132-7, 2-9-1, and 2-14-26.

ACREAGES: There would be minor differences between acreage figures for similar analyses. This is primarily due to different sources of data and rounding errors. This is understood and is never enough difference to change results.

3.1 – VEGETATION

3.1.1 – SCOPE OF ANALYSIS

Spatial Framework

The scope of analysis focuses on NFS lands within the KRM EA area for direct and indirect effects. Vegetation treatments directly influence the treated stands and adjacent stands that are all confined within this boundary. The analysis of vegetation is scaled to LEs and based on forest types and age-classes, as defined in the 2004 Forest Plan.

Time frame

The timeframe for the analysis is all of the past years that led to the current existing condition and the next 5 to 10 years. Within about 5 years the harvesting itself would be completed and direct effects to various resources would cease. The next 10 years fits within the vegetation analysis tools for changes in forest types and age classes. Within that time frame, the area would be reanalyzed and we would determine if further harvesting or other treatments would be necessary to change the forest types or acres of forest types necessary to meet the Forest Plan objectives.

3.1.2 – MANAGEMENT DIRECTION AND FOREST PLAN CONSISTENCY

3.1.2.1 - Forest Plan Guidance

All of vegetation analysis in this project has been driven by Decade 2 landscape ecosystem objectives. These are defined in Chapter 2 of the 2004 Forest Plan (FP). There are m any of the pertinent objectives, standards, and guidelines from the Forest Plan that guide vegetation analysis. Only a very few are listed here.

O-TM-1: Provide commercial wood for mills in northern Minnesota.
G-TM-2: Clearcutting may be used to regenerate the following forest types: jack pine, red pine, spruce-fir, oak, aspen, aspen-spruce/fir, paper birch and lowland conifers.
O-VG-14: Maintain a full range of age-classes from young to old.

The management of the Chippewa National Forest lands is guided by the Forest Plan. The plan identifies ten different management areas located across the Forest. Each management area (MA) provides management direction for specific management areas. Each MA identifies desired conditions, objectives, standards, and guidelines. The KRM EA area is included in five Management Areas. (See Table 1.1.b.)

3.1.2.2 - Silvicultural Prescriptions Used in the KRM EA

Definitions for these prescriptions are found in Appendix F of this document and within these sections in the Specialist Report EA (PR# 480).

3.1.2.2.1 -- Prescriptions that set the stand age to 0 years

Clearcut with Reserves
Coppice with Reserves
Shelterwood with Reserves

3.1.2.2.2 -- Prescriptions that would not set the stand age to zero

Single Tree Selection
Group Selection
2-Aged Shelterwood with Reserves
Thinning

3.1.2.3 - Appropriateness and Optimality

Appropriateness of Even-aged Management and Optimality of Clearcutting

The National Forest Management Act (NFMA) of 1976 requires that when timber is to be harvested using an even-aged management system, a determination will be made that the system is appropriate to meet the objectives and requirements of the Forest Plan. Where clearcutting is to be utilized, it must be determined to be the optimum method (FSH 1909.12 64.5.). A regeneration prescription is prepared based primarily upon biological requirements of the stand, landscape ecosystem guidance, and Management Area direction. Even-aged systems are considered normal and appropriate for most forest types in the Forest Plan, excluding black ash. Aspen, paper birch, red pine, jack pine, white spruce, white pine, balsam fir, black ash, and northern hardwoods occur within the project area as primarily even-aged stands, although often with assorted mixtures of ages and species of trees in the form of advanced regeneration in the understory and midstory. Maple is the one species with uneven-aged conditions commonly occurring naturally. In most cases the stands (other than maple and northern hardwoods) were best-suited for regeneration back to similar species, often with retention of selected advanced regeneration, seeding or planting. Based upon past experience and extensive research, even aged management systems (clearcutting, seed tree cuts and shelterwood cutting) are the appropriate regeneration methods for these species in these stands on the Chippewa NF.

Clearcutting is proposed in various alternatives for Aspen, Jack pine, Red Pine, Paper Birch, and Fir/Spruce types. Clearcutting is considered to be the optimum regeneration method for these types because it best meets the biological requirements (adequate sunlight) for regeneration and growth of these species or the species associated with them; and provides habitat, and recreation opportunities which are the expected outputs of the project area. There are a very few stands that were mis-typed as black ash stands but field reconnaissance after the GIS data was "frozen" showed them to be aspen stands. These would be harvested as aspen stands and regenerated with aspen, with some or all of the black ash retained.

The Final EIS of the Forest Plan Revision discussed the appropriateness of even-aged management and the optimality of clearcutting in Chapter 3 (Affected Environment and Environmental Consequences, Section 3.4 Timber). This EA tiers to that section as discussed above.

All stands proposed for timber harvesting in the KRM EA are on lands considered suitable for timber management (FSH 1909.12 62.1, 62.21, and 62.22.).

All stands that are proposed for regeneration harvesting have reached culmination of mean annual increment (FSH 1909.12 64.4.) and will be treated by methods that assure adequate restocking within 5 years (FSH 1909.12 64.2.).

3.1.3 EXISTING CONDITION

3.1.3.1 -- Description of Issues

From Section 1.6, there are one key issue and 3 non-key issues that are affected by vegetation management.

Key Issue 1: Amount of Harvesting

The timber industry has stated that cutting according to the proposed alternatives is not enough timber harvesting to meet the Forest Plan guidance of 39% clearcutting, to meet Forest Plan Objectives for the 0-9 year age-classes, or to manage the large amount of overmature aspen in the Kitchi EA area.

Indicators:

- Percentage and acreage of harvest treatments that are clearcuts/coppice cuts compared to the Forest Plan goal of 39%. (Section 3.1.4.2)
- Percentage and acreage of 0-9 year age-class made by treatments. (Section 3.1.4.2)
- Acres of over mature aspen treated (used >50 years for minimum age for over mature aspen) (Section 3.1.4.3)
- Percentages of species compositions compared to Forest Plan LE objectives. (Section 3.1.4.7)

Non-key issue: Clearcutting and Diversity: Excessive clearcutting leads to a lack of diversity.

Indicators:

- Acres clearcut (Section 3.1.4.4)
- Species and percentage of trees retained for diversity in clearcuts (Section 3.1.4.4)

Non-key issue: Water Quality and Riparian Areas: Harvesting, roads, and other vegetation management activities, especially in riparian zones or near wetlands, may cause water quality/visual problems.

Indicators:

- BMP's required to be used to protect water resource in those zones (Section 3.1.4.5)
- Acres, number of stands, and types of harvesting within 200 feet of riparian areas or wetlands. (Section 3.1.4.5)
- Effects from this harvesting. (Section 3.1.4.5)

Non-key issue: Riparian and long-lived species:
Management under the Proposed Action in riparian zones does not meet Forest Plan guidance for long-lived species in riparian areas.

Indicators:

- Acres managed within the 200 foot riparian zones. (Section 3.1.4.6)
- Acres treated for long-lived species in Riparian zones (Section 3.1.4.6)
- Species planted in riparian zones (Section 3.1.4.6)

3.1.3.2 -- Minnesota County Biological Survey

The State of Minnesota has been working at classifying land, based on the location of rare plants and animals. Sites of biodiversity significance are being identified as part of the Minnesota County Biological Survey for rare natural features. The survey for Cass has been completed, but will be revised further in the next year. Beltrami and Itasca Counties are still in preliminary stages and are at the earliest stages of development. The Forest Service looked at this data for possible use in the analysis within its Resource Management Areas, but will not be utilizing the data at this time because the counties within the Chippewa National Forest are currently incomplete.

3.1.3.3 -- Monitoring

Every year, monitoring of activities from the previous year takes place, to determine how well the Chippewa National Forest is meeting the Forest Plan objectives. After 4 years since the implementation of the Forest Plan, the most recent monitoring (PR# 239ee, Monitoring and Evaluation Report from FY 2008), is just beginning to reveal trends patterns and results from implementation of the 2004 Forest Plan.

3.1.3.4 -- Dropped Stands Not Represented in Tables

After analysis had begun on this project area, the Chippewa National Forest botanist reanalyzed several areas and it was determined that some stands were located in habitats suitable for Goblin fern (*Botrychium mormo*) that was adjacent and contiguous to known Goblin fern locations. Those stands are included in the analysis data because it is too difficult to remove them at this stage of the analysis, but no activities that are currently proposed for those stands will be carried out in any of the alternatives. These stands are 1/88/9, 1/88/23, 1/88/115, 1/129/34, 1/129/36, 1/129/81, and 2/26/64.

3.1.3.5 -- Tables and Analysis for LEs

In accordance with the Forest Plan vegetation objectives, analyses were conducted on the portions of each LE within KRM EA area to assess the current condition of vegetation. The tables in the Specialist Report EA (PR# 480) display the results of this analysis for each LE. Forest wide current conditions and objectives are displayed in each table as well as KRM EA area existing condition. This EA only contains the highlights of these tables because they are so large and complex.

Landscape Ecosystems (LE) along with the management areas influence management activities within the KRM EA area and it is through the LE scale level that the treatment effects will be analyzed. Analysis was conducted on Forest Service system lands (NFS lands) in portions of five landscape ecosystems within the KRM EA area. The largest of these is the **Dry Mesic Pine Oak (DMPO)** composing 62% of the NFS lands in the project area. (See Table 1.1.a) Large lakes comprise 32% of the area, but are not included in LEs.

3.1.3.5.1 – DRY MESIC PINE OAK (DMPO) LE

Compared to the LE objectives in the Forest Plan for the DMPO LE:

- In all cases more 0-9 year age class is needed due to outgrowth.
- In the **uplands** the following are **below** the desired conditions: 10-39, 120-179, and 180+ age classes and the jack pine, red pine, white pine, spruce/fir, and northern hardwoods forest types.
- In the **uplands** the following are **above** the desired conditions: 40-49 and 80-119 age classes and the aspen forest type.
- In the **lowlands** the following are **below** the desired conditions: 10-39, 120-179, and 180+ age classes and the black spruce forest type.
- In the **lowlands** the following are **above** the desired conditions: 40-49 and 80-119 age classes and the white cedar forest type.

According to the FY 2008 Monitoring Report (PR# 239ee) there are the following differences from the comparison to the Forest Plan above, due to treatments since 2004 for the DMPO LE:

- Northern hardwoods now are above the desired amount and white pine and oak need to be maintained. The greatest need is to increase jack pine and decrease aspen.

- Recommendation: Could harvest jack pine in the 40-79 and 80-119 age-class to meet 0-9 objectives and partially meet jack pine objectives. Converting other forest types particularly aspen, to jack pine would need to happen to meet the jack pine objectives fully.

3.1.3.5.2 - MESIC NORTHERN HARDWOODS (MNH) LE

Compared to the LE objectives in the Forest Plan for the MNH LE:

- In all cases more 0-9 year age class is needed due to outgrowth.
- In the **uplands** the following are **below** the desired conditions: 80-119 and 120+ age classes and the spruce/fir and northern hardwoods forest types.
- In the **uplands** the following are **above** the desired conditions: 10-39 and 40-49 age classes and the aspen and paper birch forest types.

In the **lowlands** the following are **below** the desired conditions: 120-179 and 180+ age classes and the black spruce forest type.

In the **lowlands** the following are **above** the desired conditions: 10-39, 40-49, and 80-119 age classes and the lowland hardwoods and white cedar forest types.

According to the FY 2008 Monitoring Report (PR# 239ee) there are the following differences from the comparison to the Forest Plan above, due to treatments since 2004 for the MNH LE:

Northern hardwoods now are above the desired amount and aspen, paper birch, and spruce–fir are below the desired amounts. The greatest need is to reduce the existing amount of northern hardwood.

3.1.3.5.3 - TAMARACK SWAMP (TS) LE

Compared to the LE objectives in the Forest Plan for the TS LE:

In all cases more 0-9 year age class is needed due to outgrowth.

In the **uplands** the following are **below** the desired conditions: 10-39 and 120-189 age classes and the spruce/fir forest type.

In the **uplands** the following are **above** the desired conditions: 40-79 and 80-119 age classes and the oak, aspen, and paper birch forest types.

In the **lowlands** the following are **below** the desired conditions: 10-39 and 120-179 age classes and the black spruce forest type.

In the **lowlands** the following are **above** the desired conditions: 40-49 and 80-119 age classes and the lowland hardwoods and white cedar forest types.

According to the FY 2008 Monitoring Report (PR# 239ee) there are the following differences from the comparison to the Forest Plan above, due to treatments since 2004 for the TS LE:

Northern hardwoods and red pine now are above the desired amount. The greatest need is for an increase in the spruce-fir.

3.1.3.5.4 - DRY PINE (DP) LE

Compared to the LE objectives in the Forest Plan for the DP LE:

In all cases more 0-9 year age class is needed due to outgrowth.

In the **uplands** the following are **below** the desired conditions: 10-39 age class and the jack pine and spruce/fir forest types.

In the **uplands** the following are **above** the desired conditions: 40-79, 80-179, and 180+ age classes and the oak, aspen, paper birch, northern hardwoods, jack pine, and red pine forest types.

In the **lowlands** the following are **below** the desired conditions: 10-39 age class and the black spruce and lowland hardwoods forest types.

In the **lowlands** the following are **above** the desired conditions: 40-79, 80-179, and 180+ age classes and the tamarack and white cedar forest types.

According to the FY 2008 Monitoring Report (PR# 239ee) there are the following differences from the comparison to the Forest Plan above, due to treatments since 2004 for the DP LE:

Spruce/fir is now at the desired amount. The greatest need is to increase jack pine and reduce the amount of aspen in this LE.

3.1.3.5.5 - DRY MESIC PINE (DMP) LE

Compared to the LE objectives in the Forest Plan for the DMP LE:

In all cases more 0-9 year age class is needed due to outgrowth.

In the **uplands** the following are **below** the desired conditions: 10-39 age class and the red pine, white pine, spruce/fir, oak, and paper birch forest types.

In the **uplands** the following are **above** the desired conditions: 40-79 age class and the northern hardwoods and aspen forest types.
In the **lowlands** the following are **below** the desired conditions: 10-39, 120-179, and 180+ age classes and the black spruce forest type.
In the **lowlands** the following are **above** the desired conditions: 40-79 and 80-119 age classes and the tamarack, lowland hardwoods, and white cedar forest types.

According to the FY 2008 Monitoring Report (PR# 239ee) there are the following differences from the comparison to the Forest Plan above, due to treatments since 2004 for the DMP LE:
Red pine is now at the desired amount.

3.1.4 - DIRECT AND INDIRECT EFFECTS ON VEGETATION

ACREAGES: There could be minor differences between acreage figures for similar analyses. This is primarily due to different sources of data and rounding errors. This is understood and is never enough difference to change results.

3.1.4.1 -- Summary and Indicators
The indicators from Section 3.1.3.1 will be used for analysis..

3.1.4.2 -- Indicators -- Clearcutting and 0-9 Year Age-class
Percentage and acreage of harvest treatments that are clearcuts/coppice cuts compared to the Forest Plan goal of 39%.
Percentage and acreage of 0-9 year age-class made by treatments.
(For Key Issue 1: Amount of Harvesting)

Alternative A has no clearcutting. So at the end of the decade there would be 0% of the NFS land in the 0 to 9 year age class, unless there are natural disturbances that regenerate patches of timber, in which case the same regeneration would occur under the action alternatives also.

Alternative B harvests 1,193 acres by clearcutting. This is 40% of the total harvesting in the KRM EA. Combined with the shelterwood harvesting and wildlife opening conversion to tree regeneration, this gives 4.4% of the NFS land in the 0 to 9 year age class (1,344 acres).

Alternative C harvests 488 acres by clearcutting. This is 19% of the total harvesting in the KRM EA. Combined with the shelterwood harvesting and wildlife opening conversion to tree regeneration, this gives 2.0% of the NFS land in the 0 to 9 year age class (620 acres).

Alternative D harvests 225 acres by clearcutting. This is 15% of the total harvesting in the KRM EA. Combined with the shelterwood harvesting and wildlife opening conversion to tree regeneration, this gives 1.1% of the NFS land in the 0 to 9 year age class (335 acres).

3.1.4.3 -- Indicators - Overmature aspen
Acres of over mature aspen treated (used >50 years for minimum age for over mature aspen)
(For Key Issue 1: Amount of Harvesting)

Alternative A
Alternative A treats no mature or overmature aspen. So the aspen would continue to age, rot, and convert to other species.

Alternative B
Alternative B treats about 929 acres of 3,367 acres of over-mature aspen on NFS lands in the KRM EA area, almost entirely in the DMPO LE.

Clearcutting would be done on about 535 acres of over-mature aspen. About 488 acres would remain aspen or aspen/spruce stands, while 47 acres would be planted to convert to white pine, red pine, jack pine, or spruce depending on the site condition. Uneven-aged management is planned for 346 acres of over-mature aspen. About 296 acres would be converted to northern hardwoods or oak. About 50 acres would remain as aspen stands with an increased percentage of northern hardwoods due to the residual trees left in these shelterwood with reserve harvests, plus about 18 acres of these uneven-aged stands would have a component of mostly white and some red pine and jack pine planted beneath the canopy. Thinning would occur on 48 acres of mature aspen. These stands would be converted to shade tolerant northern hardwoods through thinning.

Alternative C
Alternative C treats the same 929 acres of over-mature aspen as in Alternative B.

However, fewer acres are clearcut (479 acres), although the same 47 acres are converted. Uneven-aged management is planned for more acres (403 acres), with more acres converted to northern hardwoods (353 acres) and the same 50 acres remaining as aspen with an increased northern hardwood and/or conifer component. The same 48 acres would be thinned.

Alternative D
Alternative D treats much less over-mature aspen than in Alternatives B and C (only 492 acres).

Less than half as many acres are clearcut (202 acres) and only 37 acres are converted but with no jack pine and less red pine. Uneven-aged management is planned for many fewer acres (242 acres), with many fewer acres converted to northern hardwoods (193 acres) and 49 acres remaining as aspen with an increased northern hardwood and/or conifer component (one acre in TS LE is dropped). The same 48 acres would be thinned.

3.1.4.4 -- Indicators -- Acres clearcut and diversity retained

Non-key issue: Clearcutting and Diversity: Excessive clearcutting leads to a lack of diversity.
Indicators:
- Acres clearcut
- The number of stands and acres converted

Alternative A
Under Alternative A there would be no clearcutting, no planting, and no managed conversions. Stands would be allowed to mature and slowly change to more shade tolerant, longer-lived species. There would be diversity based on what species are present now and the ability of these species to regenerate naturally under an overstory.

Alternative B
Alternative B has the most clearcutting (1,193 acres) and the most planting (478 acres). This results in large temporary openings, many shade intolerant trees (e.g. aspen), but also large numbers of reserve trees of many species and many legacy patches, which add diversity and are a possible seed source. The reserve trees and legacy patches would follow the Forest Plan guidance of 7-10 reserve trees per acre in regeneration harvests and 5% of the area left as legacy patches in clearcuts over 20 acres.

Planting or natural seeding/regeneration would be done to convert some stands from one forest type to another (about 197 acres) for Forest Plan objectives and to match site conditions better. Usually this is converting from aspen by planting pines (jack, red, and white) and white spruce (about 47 acres) or red pine to jack pine (about 69 acres). Two stands labeled as black ash stands in the database are actually mature aspen stands and would be clearcut and "converted" to the aspen type. Another stand is called red pine but is really aspen and would be clearcut and converted to jack pine.

It clearcuts 16 red pine stands (about 350 acres); converting two to jack pine, including the previously discussed one. The remainder would be planted back to red pine. All but four acres (the aspen stand) would have fire prescribed for blueberry enhancement and/or fuel reduction. This would generate timber volume, increase blueberries, increase the 0-9 year age class, and increase jack pine in the DMPO LE. Reserve trees would need to be non-red pine due to Diplodia tip blight and Sirococcus shoot blight.

In other stands, trees would be planted to add diversity to a stand (component of other species), but not to alter the existing forest type. About 66 acres will be planted for within stand diversity. Species include white pine (61 acres) and red pine (5 acres).

Alternative C
Alternative C has much less clearcutting (488 acres) and less planting (107 acres) than Alternative B, so fewer large temporary openings, fewer regenerated shade intolerant trees, and fewer reserve trees/legacy patches in harvest units, but more large, unharvested trees/stands retained.

Conversions under Alternative C are about half of Alternative B (86 acres). These are the same 47 acres converted from aspen, one of the same black ash and one of the same red pine.

It clearcuts only 2 of the 16 red pine stands from Alternative B (about 14 acres); converting one to jack pine (4 acres). The other would be planted back to red pine. The jack pine stand would have fire prescribed for blueberry enhancement and/or fuel reduction.

In other stands, trees would be planted to add diversity to a stand (component of other species), but not to alter the existing forest type. About 70 acres will be planted for within stand diversity. Species include white pine (64 acres), red pine/jack pine (5 acres), and jack pine (10 acres).

Alternative D
Alternative D has only half the clearcutting as Alternative C (225 acres) and half the planting (46 acres) than Alternative B, so fewer large openings, fewer regenerated shade intolerant trees, and fewer reserve trees/legacy patches in harvest units, but more large trees retained.

Conversions under Alternative D are also about half of Alternative C (44 acres). These are some of the same ones converted from aspen, the same black ash, and the same red pine.

It clearcuts the same 2 red pine stands from Alternative c (about 14 acres) and treats them the same.

In other stands, trees would be planted to add diversity to a stand (component of other species), but not to alter the existing forest type. About 36 acres will be planted for within stand diversity. Species include white pine (26 acres) and jack pine (10 acres).

3.1.4.5 -- Indicators -- Riparian Zones

Non-key issue: Water Quality and Riparian Areas: Harvesting, roads, and other vegetation management activities, especially in riparian zones or near wetlands, may cause water quality/visual problems.
Indicators:

BMP's required to be used to protect water resource in those zones
Acres, number of stands, and types of harvesting within 200 feet of riparian areas or wetlands.
Effects from this harvesting.

Alternative A
No activities would occur within the riparian management zones under Alternative A, so there are no impacts from activities.

Alternative B
About 77 acres of harvesting would occur within the 200 foot riparian management zones. These harvest areas are portions of larger stands where the bulk of the acreage falls outside of the RMZ. About 25 acres falls within the "near-bank" (1st 100 feet) and about 52 acres falls within the "remainder" zone. Much less than that would be harvested due to Forest Plan mitigations and the use of BMPs. Portions of stands in the RMZs would have different prescriptions, such as leaving higher densities, creating "no-cut" buffer zones, or planting white pine; in order to protect and/or enhance the riparian ecosystem. The 25 acres within the near-bank zones would not be harvested, except to maintain or restore the riparian ecosystem. Harvests within the remainder zones would generally leave higher tree densities than farther away, snags for wildlife habitat, and longer-lived species.

Best Management Practices (BMPs) used to protect and maintain conditions in the RMZs include retaining wildlife habitat trees/slash/logs, retaining super canopy, long-lived trees, retaining or increasing conifers, minimizing compaction and erosion, retaining high basal areas along the water to minimize changed in water temperature, using extended rotations, and maintaining shoreline stabilization, maintaining filter strips, and keeping slash out of the water. (PR# 72b, MFRC, Riparian Areas, p. 28-40 and 87) (Forest Plan, p. 2-9, p. 2-12 and 2-13)

Effects of harvesting in the remainder zone could be soil compaction, soil rutting, and loss of understory vegetation, leading to an increase in water temperature and increased sedimentation. These detrimental effects are mitigated using BMPs.

Since stands would be managed for longer lived species, and many of those would have a component of white pine, white spruce, and red pine planted beneath the canopy, another effect would be an increase in the number of longer lived species and an increase in species diversity within those riparian zones.

Alternative C
Alternative C is similar to Alternative B, but with only 73 acres not 77 (24 near bank and 49 remainder acres). The same mitigations measures and BMPs would be used.

Alternative D
Under Alternative D much less harvesting would done in riparian zones (18 acres) (5 near bank and 13 remainder acres). The same mitigations would be applied as Alternative B and Alternative C.

3.1.4.6 -- Indicators -- Riparian Zones
Management in riparian zones is not being done for long-lived species.
Indicators:
Acres managed within the 200 foot riparian zones.
Acres treated for long-lived species in Riparian zones
Species planted in riparian zones
(For Non-key issue: Riparian and long-lived species: Management under the Proposed Action in riparian zones does not meet Forest Plan guidance for long-lived species in riparian areas.)

Alternative A
No harvest activities would occur in the RMZs under Alternative A. Forest succession would continue to occur naturally.

Alternative B
Within Riparian Management Zone (RMZ)
Alternative B has a total of about 146 acres of activities within the 200 foot RMZ. This includes about 77 acres of harvesting discussed in Section 3.1.4.5 plus 112 acres of site preparation, regeneration, TSI, and fuel removal. There are also 100.5 acres of non-harvest related activities. This adds to 289.5 acres but is only 146 acres of stands due to multiple treatments in single stands. The harvest/regeneration and wildlife opening reforestation are the only activities that affects the species present. There is an emphasis toward longer lived species and to enhance and restore ecological function. Silviculture prescriptions in riparian zones generally leave longer-lived species such as white pine, red pine, tamarack, sugar maple, basswood, white spruce, and oak; while harvesting mature aspen and other short lived species. Most would be underplanted with white pine.

Portions of 11 wildlife openings also fall within the riparian management zones (3.0 acres) with 0.9 acres planted with tamarack, elm, oak, white pine, and/or red pine.

Alternative C
The discussion for Alternative C is the same as for Alternative B, but on two more acres. It includes more burning but this does not affect the species present.

Alternative C has a total of about 148 acres of activities within the 200 foot RMZ. This includes about 73 acres of harvesting discussed in Section 3.1.4.5 plus 86 acres of site preparation, regeneration, TSI, and fuel removal. There are also the same 100.5 acres of non-harvest related activities. This adds to 259.5 acres but is only 148 acres of stands due to multiple treatments in single stands.

The wildlife openings are the same as Alternative B.

Alternative D
Alternative D has a total of about 94 acres of activities within the 200 foot RMZ. This includes about 18 acres of harvesting discussed in Section 3.1.4.5 plus 8.5 acres of site preparation, regeneration, TSI, and fuel removal. There are also 70.5 acres of non-harvest related activities on some of the same stands as in Alternatives B and C. This adds to 97 acres but is only 94 acres of stands due to multiple treatments in single stands.

The wildlife openings are the same as Alternatives B and C.

3.1.4.7 -- Indicators -- FOREST WIDE LE VEGETATION COMPOSTION AND AGE-CLASS COMPOSITION

Percentages of species compositions compared to Forest Plan LE objectives.
(For Key Issue 1: Amount of Harvesting)

The tables in the Specialist Report EA (PR# 480) show the Forest Plan's Forest-wide vegetation and age-class objectives and the Forest-wide conditions for each of the Kitchi project area alternatives. Due to the complexity and length of the tables and discussions, only brief summaries of the pertinent information are included in the EA. This is enough information to show the differences between the alternatives that are needed to make a decision and to see the major effects of the treatments.

For the most part, lowland species are not mentioned below unless treatments are proposed.

For Alternatives B and C, 83 acres of wildlife openings would be naturally regenerated or planted and for Alternative D, 85 acres of wildlife openings would be naturally regenerated or planted, which would place them in the 0-9 age-class.

Dry Mesic Pine Oak (DMPO) LE -- Age Class
Under Alternative A, no 0-9 year age-class is made in the next 10 years (to 2020).

Under Alternative B there is 6% of new 0-9 year age class (1,240 acres) in the next 10 years (to 2020) in the DMPO LE uplands that is the highest of the action alternatives, although the desired amount is 9%. This comes from the 40-49, 80-119, and 120-179 year age classes, which puts all of them closer to the desired Decade 2 objectives. This includes 76 acres of wildlife opening conversion to forested stands.

Under Alternative C there is 3% of new 0-9 year age class (683 acres) in the DMPO LE uplands that is the middle of the action alternatives, coming primarily from the 40-49 and 80-119 year age classes, which puts them closer to the desired Decade 2 objectives. This includes 76 acres of wildlife opening conversion to forested stands.

Under Alternative D there is 2% of new 0-9 year age class (321 acres) in the DMPO LE uplands that is the lowest of the action alternatives, coming primarily from the 80-119 year age class, which puts it closer to the desired Decade 2 objectives. This includes 78 acres of wildlife opening conversion to forested stands.

Ingrowth puts the 180+ year age class at the desired 1%.

Dry Mesic Pine Oak (DMPO) LE -- Vegetation Type
Under Alternative A there are no changes to the vegetation types/forest types. In 10 years compared to Decade 2 upland objectives; jack, red, and white pines and oak remain low. Spruce/fir, northern hardwoods, and aspen remain high.

Under Alternative B in DMPO LE there is harvesting, so in 10 years compared to Decade 2 upland objectives: jack and white pines and oak increase but still remain low. Red pine decreases to become even lower. Spruce/fir and aspen decrease but still remain high. Northern hardwoods increase to become even higher. Paper birch decreases to become low (the lowest of Alternatives B, C, or D). Alternative B moves three types the most in the desired direction: jack pine, spruce/fir, and oak. It moves two types the least: red pine and white pine.

Under Alternative C in DMPO LE there is harvesting, so in 10 years compared to Decade 2 upland objectives: jack, red, and white pines and oak increase but still remain low. Spruce/fir and aspen decrease but still remain high. Northern hardwoods increase to become even higher (the most of Alternatives B, C, or D). Paper birch decreases to become low. Alternative C moves three types the most in the desired direction: red pine, aspen, and oak.

Under Alternative D in DMPO LE there is harvesting, so in 10 years compared to Decade 2 upland objectives: jack, red, and white pines and oak increase but still remain low. Aspen decreases but still remains high. Spruce/fir and northern hardwoods increase to become even higher. Paper birch decreases to become low (the least decrease of Alternatives B, C, or D). Alternative D moves two types the most in the desired direction: red and white pine. It moves three types the least in the desired direction: jack pine, oak, and aspen. It is the only one to move spruce/fir in the wrong direction. It moves northern hardwoods in the wrong direction but the least of the three action alternatives.

There are minor activities in the lowland hardwoods in DMPO LE, with some GIS problems in three stands. Two stands of black ash are being clearcut in Alternative B and converted to aspen and one is being thinned and converted to black ash. There was a mistake in delineating the forest types years ago. These should have been called aspen stands with a component of black ash, not black ash with some aspen; however this was not discovered until after all of the data was "frozen" for the analysis, so to correct the problem they are being considered conversions in the EA. Under Alternative C only one of the two clearcuts is being done along with the

thinning; the other clearcut stand is remaining as it is and the forest type would have to be dealt with in the future. Under Alternative D only one of the clearcuts is being done. These harvests and regeneration fit in with the current Forest policy for dealing with the Emerald Ash Borer by keeping some black ash but increasing the diversity of species within stands, thereby making options for other forest types if the ash is killed.

There are increases in acreages due to conversions of wildlife openings to various forest types. Due to different sources of information and rounding errors, the 76 acres of conversions (78 in Alt. D) that are split between lowland and upland in the DMPO LE do not add up to 76 acres (or 78) in the table and are not discussed specifically here.

Mesic Northern Hardwood (MNH) LE -- Age Class
Under Alternative A no 0-9 year age-class is made in the next 10 years (to 2020).

Under Alternatives B, C, and D there is no harvesting, so no new 0-9 year age class in the next 10 years (to 2020). However there are 3 acres of upland and 3 acres of lowland wildlife openings converted to forested stands.

Due to outgrowth this leaves the 40-79 year age class in upland and lowland much lower than desired. Due to ingrowth this leaves the 80-119 year age class in upland and lowland much higher than desired. The 0-9 year age class is at 0% rather than the desired 6% and 2% for uplands and lowlands respectively.

Mesic Northern Hardwoods (MNH) LE -- Vegetation Type
There is no regeneration harvesting so under all alternatives there are no changes to the vegetation types/forest types, other than 6 acres of wildlife openings converting to various forested types. In 10 years compared to Decade 2 upland objectives: red and white pines, spruce/fir, and aspen remain low. Northern hardwoods and paper birch remain high.

Tamarack Swamp (TS) LE -- Age Class
Under Alternative A no 0-9 year age-class is made in the next 10 years (to 2020). Under Alternatives B, C, and D there is no harvesting, so no new 0-9 year age class in the next 10 years (to 2020). There are very few acres of TS LE so the percentages do not mean much. Only outgrowth and ingrowth are occurring.

Tamarack Swamp (TS) LE -- Vegetation Type
There is no regeneration harvesting so under all alternatives there are no changes to the vegetation types/forest types. In 10 years compared to Decade 2 upland objectives: red and white pines, and spruce/fir remain low. Jack pine, oak, northern hardwoods, aspen, and paper birch remain high.

Dry Pine (DP) LE -- Age Class
Under Alternative A no 0-9 year age-class is made in the next 10 years (to 2020).

Under Alternative B there is 7% of new 0-9 year age class (67 acres) in the next 10 years (to 2020) in the DP LE uplands that is the highest of the action alternatives, although the desired amount is 10%. This comes from the 40-79 and 80-179 year age classes. This puts the 40-79 age class below the desired Decade 2 objective. This puts the 80-179 age class closer to the desired Decade 2 objectives, but still much above it. Included in the 0-9 year age class is less than one acre of wildlife opening conversion to a forested condition.

Under Alternative C there is 2% of new 0-9 year age class (16 acres) in the DP LE uplands that is the middle of the action alternatives, coming primarily from the 40-79 year age class. This puts the 40-79 age class very close to the

desired Decade 2 objective. This leaves the 80-179 age class even higher than Alternative B. Included in the 0-9 year age class is less than one acre of wildlife opening conversion to a forested condition.

Under Alternative D there is 2% of new 0-9 year age class (15 acres) in the DP LE uplands that is the lowest of the action alternatives, coming primarily from the 40-79 year age class. This puts the 40-79 age class very close to the desired Decade 2 objective. This leaves the 80-179 age class even higher than Alternative B. Included in the 0-9 year age class is less than one acre of wildlife opening conversion to a forested condition.

Dry Pine (DP) LE -- Vegetation Type
There is no conversion after harvesting so under all alternatives there are no changes to the vegetation types/forest types, except less than one acre of conversion of a wildlife opening to a forested condition. In 10 years compared to Decade 2 upland objectives: Jack pine and spruce/fir remain low. Red pine, oak, northern hardwoods, aspen, and birch remain high.

Dry Mesic Pine (DMP) LE -- Age Class
Under Alternative A no 0-9 year age-class is made in the next 10 years (to 2020). Under Alternatives B, C, and D there is no harvesting, so no new 0-9 year age class in the next 10 years (to 2020), except for 2 acres of wildlife openings being converted to forested conditions (split between upland and lowland but not specifically divided here). This leaves the 40-70 year age class in the uplands well above the desired condition for Decade 2. There are very few acres of DMP LE so the percentages do not mean much. Only outgrowth and ingrowth are occurring.

Dry Mesic Pine (DMP) LE -- Vegetation Type
There is no regeneration harvesting so under all alternatives there are no changes to the vegetation types/forest types, except for 2 acres of wildlife openings being converted to forested conditions (split between upland and lowland but not specifically divided here). In 10 years compared to Decade 2 upland objectives: spruce/fir, northern hardwoods, and aspen remain low. Red pine and paper birch remain high.

SECTION 3.1.5- CUMULATIVE EFFECTS
Spatial framework:
Same as for direct/Indirect Effects, but including other ownerships. No data is available for private ownerships regarding existing vegetation, harvest history, or harvest plans.

Timeframe:
Analysis includes vegetation projects within the past 10 years, and future projects for the next 1 to 10 years on NFS lands, the State of Minnesota, Beltrami County and Leech Lake Band of Ojibwe land (LLBO). These timeframes cover the time periods where disturbance from past management activities is still quite visible and where we can reasonably foresee future activities.

Past Impacts:
With the implementation of the 2004 Forest Plan and the 1986 Forest Plan, vegetation of the area has been managed for multiple use objectives with a heavy emphasis placed on timber production. There have been some harvests on state and county lands. The timber sales of Beltrami County and state of Minnesota ownership have contained predominantly clearcutting and shelterwood harvests.

There have been harvests on 80 acres of LLBO lands over the past decade. Activities on LLBO land consisted of about 40 acres of precommercial thinning and pruning, and 40 acres of aspen harvest (trespass). Other past activities have taken place on approximately 240 acres of LLBO land. Those other activities include road clearing, home site development, and hazardous fuels reduction.

A small amount of harvesting has taken place on both Beltrami County and Minnesota State land. The timber sales of Beltrami County and State of Minnesota ownership have contained predominantly clearcutting, commercial thinning, and shelterwood harvests. This is roughly the same activities as on NFS lands with roughly the same effects, so in general all of the KRM EA area is managed.

Past activities from four prior Forest Service decisions have taken place within the Kitchi RM boundary. During the past 10 years there have been 1,759 acres of regeneration harvest completed on the NFS lands in the Kitchi project area. Of these, about 1,198 acres were clearcut, and about 561 acres were shelterwood harvested. Additional thinning and selection harvests have occurred across the project are, but did not change the stand to age 0.

Regeneration has been accomplished primarily through clearcutting and shelterwood followed by natural regeneration, and planting. Conversion s from one forest type to another has occurred within the project area. Approximately 500 acres have been planted within the project area in the past 10 years, mostly with jack pine and white pine. The forest types regenerated and the harvest methods used have been similar on State, County, and Federal ownerships.

Forest-wide and project-wide vegetation age-classes and objectives by LE are displayed in Tables 3.1.4.7.a to 3.1.4.7.j. On a forest-wide basis the acres of vegetation treatments in Alternative B, C and D do not make substantial changes in the age-class distributions. Harvest levels thus far are less than projected by the Forest Plan; plus there is constant ingrowth and outgrowth within the age-classes. If we were to meet the Forest Plan goals, the vegetation age and forest type objectives by LE would show cumulative changes in the age-class and forest types more in line with the desired goals of the Forest Plan.

Present Impacts
Currently, 254 acres of Forest Service land is actively being harvested from past EAs. The State of Minnesota has 30 acres of harvest planned for 2010. Beltrami County plans to implement 375 acres of harvest within the next five years, some of those acres being harvested in 2010. LLBO plans to implement 70 acres of harvest within the next year and 30 acres of pine planting, some of which may occur in 2010. By following the Minnesota Forest Resources Council's Voluntary Site Level Forest Management Guidelines, there has been an increase in the number of reserve trees (predominantly in clearcutting and thinning) over all ownerships and also an increase in the number of reserve or legacy patches retained within clearcuts.

Future Impacts
The Leech Lake Band of Ojibwe (LLBO), Beltrami County, and the State of Minnesota plan to harvest mature timber within the next five years. The State of Minnesota plans to harvest 30 acres through the use of partial harvests and clearcuts. Beltrami County plans to implement 375 acres of harvest within the next five years, through the use of clearcuts with reserves, partial harvests, and thinning. LLBO plans to implement 70 acres within the next year with some pine planting on 30 acres. One can assume that future harvest will take place on State, County and LLBO lands long into the future and harvest will continue at the same rate. All of these activities are similar in effects to treatments described in this EA, so Alternatives B, C, and D would add to them to the extent shown previously.

Key Issue 1: Amount of Harvesting
On a forest-wide basis the acres of vegetation treatments in Alternatives C and D, will not make a significant change in the age-class and vegetation distributions because of the continuous in-growth and out-growth from age classes. Alternative B will come closer to meeting the Forest Plan guidance of percentage of clearcuts, 0-9 age class created, and management of mature aspen. Each district needs to harvest in accordance with Forest Plan, by LE. If this happens, cumulatively, there will be changes in the age classes and vegetation types.

Non-key issue: Clearcutting and Diversity
Clearcuts by themselves are not any more impactive to diversity than other regeneration harvest methods. Most impacts from clearcutting and harvesting come from the activities that are associated with them. Clearcuts and

other regeneration harvests must be promptly regenerated, either naturally or through planting to maintain the diversity and the desired species. Site preparation is often needed to successfully regenerate a stand, but has potential impacts to soil and water resources. By following the Minnesota Forest Resources Council's Voluntary Site Level Forest Management Guidelines, there has been an increase in the number of reserve trees, predominantly in clearcutting and thinning over all ownerships and also an increase in the number of reserve or legacy patches retained within clearcuts. Planting along with retaining reserve and legacy trees may increase future diversity in clearcuts.

Non-key issue: Water Quality and Riparian Areas
The State, County, and LLBO all follow the Voluntary Site Level Forest Management Guidelines. The Forest Service has even stricter 200 foot riparian buffers, as discussed in Sections 3.1.4.5 and 3.1.4.6. There could be possible negative effects from any activity that occurs in riparian zones. Those effects should be lessened with the Voluntary Site Level Forest Management Guidelines. The future effect of harvesting within riparian zones is minimal, and the health of those ecosystems should improve in the long term. Any Forest Service harvest in the riparian zones is done for the future improved health within those zones.

Non-key issue: Long-lived species in Riparian Areas
It is unknown how much of the State, County, and LLBO land fall within riparian areas. By planting long-lived species in those zones for each of the alternatives, the numbers of long-lived species within riparian zones will likely increase in the future. Each district needs to restore riparian zones in accordance with the Forest Plan. If this happens, cumulatively, there will be increases to species diversity and stand structure within riparian zones.

3.2 - WILDLIFE

Section 3.2 is a very brief summary of the existing conditions of the wildlife resource, and the effects of the KRM project on wildlife species of concern. Much of this section in the Specialist Report EA (PR# 480) was derived from the Biological Assessment (BA) (PR# 404 and 404a) for threatened and endangered species, and the Biological Evaluation (BE) (PR# 452 and 452a) for regional forester sensitive wildlife species. All of these documents are found in the project record. (RFSS plants are found in Section 3.16)

3.2.1 - SCOPE OF THE ANALYSIS

Spatial framework:
The scope or area of the analysis varies according to the species being examined. Effects of the project alternatives are analyzed on the proposed treatment units, the project area, and forest-wide, depending on the habitat needs and ranges of the individual species.

Time frame:
The effects analysis primarily considers the changes to vegetation age classes and forest types over the next 10 years. Most of the effects are related to the 0-9 year age class, which changes in 10 years. Direct effects of harvesting would be completed in about 5 years.

3.2.2 - MANAGEMENT DIRECTION AND FOREST PLAN CONSISTENCY

All alternatives comply with the CNF Forest Plan objectives, standards, and guidelines relative to threatened and endangered species (TES), regional forester sensitive species (RFSS), management indicator species (MIS), management indicator habitats (MIH), and other species of interest.

3.2.3 - EXISTING CONDITION/AFFECTED ENVIRONMENT

There is one non-key issue based on public comments and internal discussion that is related to sensitive wildlife and their habitat and a Topic of Concern that expands on the non-key issue. (See Section 1.6).

Harvest activities may negatively impact habitat for red shoulder hawk, goshawk and other sensitive species.

Indicators:
Effects to TES and their habitats. (This applies to all TES and RFSS and habitats with various indicators listed later.)

Topic of Concern: In addition to the non-key issue, there are effects on species that must be analyzed to be sure we concur with the Forest Plan and protect TES and RFSS (including vegetation treatments other than harvesting).

Indicators:
Effects to TES and RFSS and their habitats. (This applies to all TES and RFSS and habitats with various indicators listed later.)

NOTE: The existing conditions will be discussed with the effects for each species or resource in order to a usable flow of information, since there are so many items to discuss under "wildlife".

3.2.4 – EFFECTS

There are a total of 51 special Forest Plan species analyzed: threatened and endangered species (TES) (2), regional forester sensitive species (RFSS) (48), and management indicator species (MIS) (1 of 4 not listed elsewhere). Plus, this section will analyze effects on deer, woodcock, grouse, neotropical migratory birds, and other selected species. Determinations of effects for each species are summarized in this environmental assessment. The direct and indirect effects of each project alternative on TES and RFSS are more fully described in the BA and BE and in the Specialist Report EA which can be found in the project record. (PR# 404, 404a, 452, 452a, and 480)

3.2.4.1. – THREATENED AND ENDANGERED SPECIES

The gray wolf (*Canis lupus*) and Canada lynx (*Lynx canadensis*) are listed as threatened species, with only the wolf known to exist in the KRM EA area. The BA tiers to the programmatic biological assessment for the revision of the Forest Plan (PR# 71h, USFS, 2004c) and provides detailed information regarding site-specific effects of the KRM project on threatened and endangered species. Consultation was completed with the US Fish and Wildlife Service (USFWS) and they concurred with the Chippewa National Forest's (CNFs) determination that the proposed project is not likely to adversely affect any federally listed threatened and endangered species (PR# 418, USFWS 2010).

3.2.4.1.1 -- Canada Lynx

3.2.4.1.1.1 - General/Existing Condition

The analysis area for lynx includes NFS lands within Lynx Analysis Units (LAUs) for direct and indirect effects and all ownerships within LAUs that encompass the project area (National Forest, State of Minnesota, county, and private ownerships) for cumulative effects. LAU 12 overlaps a portion of the project area.

The historic range of Canada lynx extended from Alaska across much of Canada, with southern extensions into parts of the western United States, the Great Lakes states, and New England (PR# 48, Ruediger et al. 2000). The USFWS listed the Canada lynx in March 2000 as threatened in the contiguous United States (PR# 43c, USFWS 2000). The distribution of lynx is strongly associated with the boreal forest and stable populations of snowshoe hare (PR# 36h, Ruggiero et al. 1999). There have been 4 verified lynx sightings on the Chippewa NF, 1 of which was on the Blackduck District.

3.2.4.1.1.2 - Lynx - ALTERNATIVE A (NO ACTION)

Alternative A would have no apparent direct, indirect, or cumulative effects to the lynx.

3.2.4.1.1.3 – Lynx - ALTERNATIVES B, C, and D

The BA documents the potential effects on the lynx that result from implementation of Alternative B, as the worst case scenario. In summary the effects on lynx from any of the action alternatives are minor temporary reductions in snowshoe hare habitat while ample habitat is maintained and no change in road density. All three action alternatives meet Forest Plan Standards, Guidelines, and Objectives for lynx.

3.2.4.1.1.3.8 -- Cumulative Effects for Lynx

Cumulative effects are included within the direct effects analysis, due to the interaction between all of the lands that provide habitat. Past treatments on all ownerships has resulted in the current conditions. There are no known future treatments that are not accounted for in the above analysis.

3.2.4.1.2 -- Gray Wolf

3.2.4.1.2.1 - General/Existing Condition

For wolves the entire KRM project area is used for direct, indirect, and cumulative effects. The project area is located within Wolf Management Zone 4.

The gray wolf population in Minnesota far exceeds the population goal of 1,400 wolves in the state. The winter survey of 1997-1998 showed a 50% increase in the statewide population estimate compared to surveys conducted a decade ago, with about 2,450 wolves ranging over 33,970 square miles in the state. Minnesota currently supports the highest population density of gray wolves worldwide. The 2007-2008 wolf survey results showed an estimated 2,921 wolves in the State, well above the population goal and the population in 1997-1998 (PR# 172, Erb 2008). Wolves are known to utilize the KRM project area.

3.2.4.1.2.2 - Gray Wolf - ALTERNATIVE A (NO ACTION)

Alternative A would have no apparent direct, indirect, or cumulative effects to wolves.

3.2.4.1.2.3 – Gray Wolf – ALTERNATIVES B, C, and D

Direct, Indirect and Cumulative Effects

No direct effects are expected from implementing the KRM project. Wolves are highly mobile and generally avoid high human use areas. Indirectly and cumulatively, wolves can be affected by the availability of prey species (primarily deer) and human access. In summary the effects to the gray wolf from any action alternative are: Minor reduction in white-tailed deer thermal cover in Alt. B, with an increase in deer thermal cover in Alternatives C and D. Deer foraging habitat decreases in all three alternatives due to forest aging. Ample white-tailed deer habitat is maintained. See Table 3.2.4.7.a in the White-tailed Deer Section (3.2.4.7). All three action alternatives meet Forest Plan Standards, Guidelines, and Objectives for wolves.

Currently the project area is above the wolf-road density threshold for OML 3-5/6 class roads. There would be no change in OML 3-5/6 class road density as a result of this project. This high road density is mainly due to the high amount of private land and residential areas in the western half of the project area.

3.2.4.2 – REGIONAL FORESTER SENSITIVE SPECIES (RFSS)

3.2.4.2.1 -- General and Summary

Sensitive species are plant and animal species identified by a Regional Forester for which population viability is a concern (FSM 2670.5). The KRM project Biological Evaluation (BE) (PR# 452 and 452a) was developed in consideration of relevant Forest Plan standards, guidelines, and management objectives, including conservation objectives for Sensitive Species. The BE evaluates all proposed project alternatives for effects on RFSS. A summary of findings is presented in Table 3.2.4.2.1.a.

There are 48 sensitive fish, wildlife and plant species that are known or suspected to occur on the CNF. Only those animal species that are known to be present, have suitable habitat and are at moderate/high risk in the project area were carried further in the analysis in the Specialist Report EA (PR# 480) (6 of 29 species). (19 plant species will be analyzed in a separate section (Section 3.16 - Regional Forester Sensitive Plant Species).

The CNF goals and objectives related to sensitive species would continue to be met with implementation of the KRM project. This project would not contribute to a trend toward federal listing or cause a loss of viability of sensitive animal species on the CNF. The KRM project would have **"No Impact"** on all other R9 sensitive animal species.

ALTERNATIVE A (NO ACTION)
Alternative A would have no impact on sensitive species from resource management activities because no ground disturbing activities would take place.

ALTERNATIVES B, C, and D – Sensitive Animal Species Effects Summary
Alternatives B, C, and D impact habitat to varying degrees based on treatment type and habitat requirements for each sensitive species. Refer to the individual species section for more detailed information. All three alternatives would not result in a trend to federal listing or loss of viability to a Regional Forester Sensitive Species' populations or species. A finding of **"may impact"** is associated with 6 animal species. Table 3.2.4.2.1.a summarizes the potential effects on these sensitive species from implementation of all three action alternatives.

Only the three of those six species that have key habitats in the project area are discussed in detail in this EA. They are bald eagle, northern goshawk, and black-backed woodpecker. The remaining species are discussed in detail in the BE. Mitigating measures and design features associated with these findings are presented in the BE and in stand-specific tables in Appendix H of this EA.

Table 3.2.4.2.1.a -- Summary of effects for sensitive animal species from implementation of Alternatives B, C, and D (not "no effects" species).

Species	Effects determination for Alternatives B, C, and D *	Action alternative ---- LEAST impacts species	Action alternative --- MOST impacts species	Summary of Effects
Bald eagle *(Haliaeetus leucocephalus)*	MIHN	Alts. C and D	Alt. B	Potential impacts would be negligible. Nest sites protected with timing restrictions and buffers. Potential for habitat improvement in some thinned pine stands.
Northern goshawk *(Accipiter gentiles)*	MIHN	Alt D slightly better than Alt. C	Alt. B	Habitat is reduced to varying degrees in foraging zones. Zone habitat requirements are met in zones that have vegetation treatment proposed.
Red-shouldered hawk *(Buteo lineatus)*	MIHN	Alt. C slightly better than Alt. B	Alt. D	Habitat may be improved with proposed individual tree/group selection treatments in northern hardwoods and conversions to northern hardwoods. Alternative C converts the most acres to northern hardwoods. Alternative D converts the least acres.
Black-throated blue warbler *(Dendroica caerulescens)*	MIHN	Alt D slightly better than Alt. C	Alt. B	Patch size and distribution change due to regeneration harvest. An additional very large patch develops in all three alternatives which may improve habitat.
Spruce grouse *(Falcipennis canadensis)*	MIHN	Alts. C and D	Alt. B	Potential impacts due to regeneration harvest in old jack pine (Alt. B). Habitat improvement by increasing conifer acres (all Alts.) and ecosystem burning (Alts. C and D).
Black-backed woodpecker *(Picoides arcticus)*	MIHN	Alt D slightly better than Alt. C	Alt. B	Potential impacts due to regeneration harvest in mature/old jack pine and red pine (Alt. B). Substantial amount of habitat remains after treatment. Known nest sites in treatment areas are seasonally protected. Habitat improvement with ecosystem burning in Alts. C and D.

* MIHN: May impact individuals or habitat, but will not likely contribute to a trend toward federal listing or cause a loss of viability to the population or species

3.2.4.2.2 -- Bald Eagle

The Bald Eagle was delisted from the Threatened and Endangered list in 2007. It continues to be protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Management of bald eagle habitat is guided by the National Bald Eagle Management Guidelines (PR# 131, USFWS 2007). On the CNF it is listed as a Sensitive Species.

Environmental Baseline:

Eagle numbers appear to have reached a leveling off point on the CNF. There is some evidence that in recent years, competition among breeding pairs due to high nesting densities has resulted in some declines in breeding success. It appears that the growth rate of eagles on the CNF is dropping, and the habitat in this region has reached its capacity (PR# 71h, USFS 2004c, p. 14-20).

Activity and productivity flights were conducted for bald eagles in 2007. A total of 259 nests were surveyed. Of these, 113 nests were active with 55 of them fledging young. A total of 66 eagle chicks were observed during the productivity flights, with 0.58 young fledged per active nest. This productivity is up slightly from 2005, the last year bald eagles were monitored on the CNF, when the average was 0.41 young fledged per active nest. For the period from 1987 thru 2004, CNF bald eagle monitoring shows an average of: 151 active breeding pairs (range, 88-189); 96 successful breeding pairs (range, 66-108); and 1.02 young fledged per active nest (range, 0.76-1.39) (PR# 192, USFS 2008). The KRM project area supports a number of nesting bald eagles, with at least 39 known historic and current eagle nests.

Direct, Indirect, and Cumulative Effects:

Direct Effects:

No direct effects are expected due to implementation of protection buffers around known nest sites (Appendix H of the EA). These buffers provide protection from direct effects of nesting birds and nests due to project activities, and also provide protection of proximate eagle habitat from indirect effects due to project activities (PR# 131, USFWS 2007). The buffers apply to six nests in the KRM project area that have project activities occurring within these buffers (Appendix H).

Indirect Effects:

Landscape scale conservation measures affect eagle habitat across the CNF over the long-term. These conservation measures are supported by the Forest Plan through objectives provided at the landscape ecosystem (LE) scale. LE scale objectives promote eagle conservation by maintaining or enhancing habitat sufficient to support prey base, nesting and roosting habitat. Forest-wide Forest Plan LE Management Indicators Habitat (MIH) objectives for the Dry Pine and Dry Mesic Pine/Oak LE's is to maintain and increase mature and older red and white pine forest. These two tree species constitute most of the eagle nest trees. Refer to the MIH Section 3.2.4.4 for impacts from the KRM project and changes due to forest aging in the mature/old red/white pine MIH.

The proposed clearcutting of red pine (351 acres) in Alternative B could have a negative long-term impact on bald eagle habitat where the stands proposed for treatment are near large lakes. Three stands totaling about 69 acres are within ¼ mile of lakes > 10 acres. Some of these stands could provide future nesting habitat for bald eagles.

The proposed thinning of red pine (632 acres in Alt. B, 891 in Alt. C, and 775 acres in Alt. D); 2-aged shelterwood (3 acres in Alts. B, C, and D) treatment of red pine; and thinning of white pine (7 acres in Alts. B, C, and D) would improve eagle habitat over the long-term by promoting "super-canopy" pine trees.

One red pine stand that is proposed for ecosystem burning in Alternatives C and D contains an active eagle nest. The proposed prescribed burning of this stand would improve this nest site by improving the ecological function of this stand and reducing the risk of losing this stand to a stand replacement fire. The nest tree and eagles would be protected during implementation (Appendix H of the EA).

About 95 acres are proposed for conversion and/or planting/seeding of white pine in Alternatives B and C. About 60 acres are proposed in Alternative D. These treatments would have a positive long-term impact on bald eagle habitat.

Cumulative Effects:
Activities on other land ownerships within the KRM project area are also guided by the Bald Eagle Management Guidelines (PR# 131, USFWS 2007), application of which should result in adequate site-specific protection of nesting bald eagles.

Determination of effects:
Alternatives B, C, and D **may impact individual bald eagles or their habitats, but will not likely contribute to a trend towards federal listing or loss of viability to the population or species**. This is due to potential improvements in habitat over-time, nest protection buffers, and timing restrictions during project implementation. Table 3.2.4.2.2.a displays Forest Plan compliance.

Table 3.2.4.2.2.a -- Forest Plan Compliance for Bald Eagle

Forest Plan Guidance	Compliance Met in Alternatives B, C, and D
O-WL-15 Promote bald eagle conservation	Contributes to objective through following buffer zone guidance
O-WL-6 Reduce or eliminate adverse effects of management activities	Follows buffer zone guidance of Eagle Management Guidelines

3.2.4.2.3 -- Northern Goshawk

Goshawk habitat consists of large tracts of mature, closed canopy, deciduous, coniferous and mixed forests with an open understory in fairly contiguous blocks, intermixed with younger forest and openings for production of prey species. This species appears to be uncommon in Minnesota, and there are concerns about its population status throughout the Lake States (PR# 71j, USFS 2004b, p. 32). Over the past 10 years, the number of active goshawk territories known on the CNF has ranged from 7 to 16. Of the 14 active territories in 2009 on the CNF, 11 of them successfully fledged young.

Environmental Baseline:
Goshawk habitat occurs within the KRM project area. About 56% (13,359 acres) of the 23,817 acres of potential goshawk habitat on NFS land within the project area is currently suitable habitat based on forest type and stand age. The remaining acres, 10,458 (44%) are currently too young to be consider suitable goshawk habitat. However, with age and stand development, these forest stands could provide goshawk habitat in the future. Within the project area, there are 5 known goshawk territories; Pimushe, Bass Lake, Kenogama, Flora Lake, and Cass Lake. The Bass Lake and Kenogama territories (nest + post fledgling area + foraging) cover about 14% (11,414 acres) of the project area.

Flora Lake, Pimushe, and Cass Lake are historic territories that have not been active since 1995, 1999, and 2000, respectively. No known nest structures remain at these sites. As a result, these three territories will not be carried forward in this analysis. No timber harvest activities are planned within the nesting and post-fledging zones of these historic goshawk territories.

Goshawk surveys were conducted in 2009 throughout the KRM project area in suitable habitat proposed for management activities.

Direct, Indirect, and Cumulative Effects Analysis of Known Goshawk Territories:
For analysis purposes, 3 zones (Nesting, Post-fledging, and Foraging) are analyzed within each known goshawk territory (PR# 71j, USFS 2004b, pp. 33-34). The Forest Plan (PR# 72, USFS 2004a, p. 2-32) provides Standards and Guidelines for managing habitat within the nesting and post-fledging zones. The Forest Plan does not provide

any Standards or Guidelines for managing habitat within the foraging zone. However, effects to this zone are analyzed to help assess the overall impacts to a goshawk territory.

Direct, indirect, and cumulative effects for goshawks include not only the habitat in these 3 zones within the project area, but also include habitat outside of these zones for cumulative effects.

Direct Effects:
No direct effects are expected from implementing the KRM project. This is due to protection buffers and timing restrictions around known nest sites. (See Appendix H)

Indirect and Cumulative Effects:
Vegetation treatments proposed in the KRM project have the potential to indirectly and cumulatively impact goshawks by reducing the amount and/or suitability of habitat across the landscape. A list of stands proposed for treatment and associated mitigation measures are located in Appendix H of the EA.

3.2.4.2.3.3 -- Cumulative Effects for Goshawk Territories and the KRM Project Area

Past impacts:
The USFS is the predominant public landowner in the project area. About 1,266 acres of potential goshawk habitat was harvested on NFS lands in the project area in the past 10 years (2000-2010). The Leech Lake Band of Ojibwe (LLBO) harvested about 80 acres of potential goshawk habitat in the past 10 years.

Present impacts:
There are about 49 acres of clearcut harvest; 194 acres of partial cut; 25 acres of shelterwood; and 35 acres of thinning currently being harvested on NFS land in the KRM project area. The MN DNR plans about 24 acres of partial harvest and 6 acres of clearcut in 2010.

Future impacts:
The KRM project proposes regeneration harvest in potential goshawk habitat. Alternative B proposes about 1,261 acres; Alternative C proposes about 537 acres; and Alternative D proposes about 250 acres.

The LLBO plans to harvest about 30 acres of potential habitat.

Beltrami County plans about 236 acres of regeneration harvest within the KRM project area. About 37 of these acres are within the Bass Lake foraging zone. The cumulative effects of these harvest activities would likely reduce the overall habitat quality for northern goshawks across the project area.

Table 3.2.4.2.3.3.a displays suitable goshawk habitat after implementation of the KRM project and all other public lands in the 2 goshawk territories. It reflects timber harvest (even-aged regeneration) planned by the USFS and Beltrami County within these territories, as well as harvest already completed in the past.

Table 3.2.4.2.3.3.a -- Suitable goshawk habitat on all public lands in the two active goshawk territories after implementation of the KRM project.

Zone	Existing Habitat	Target	Alt. B	Alt. C	Alt. D
	Acres (%) *	Minimum **	Acres (%) *	Acres (%) *	Acres (%) *
Kenogama					
Nest	37 (90 %)	**100%**	37 (90 %)	37 (90 %)	37 (90 %)
Post-Fledging	273 (74 %)	**60%**	273 (74 %)	273 (74 %)	273 (74 %)
Foraging	4,453 (58 %)	**40%**	4,276 (56 %)	4,365 (57 %)	4,389 (58 %)
Bass Lake					
Nest	32 (78 %)	**100%**	32 (78 %)	32 (78 %)	32 (78 %)
Post-Fledging	151 (51 %)	**60%**	151 (51 %)	151 (51 %)	151 (51 %)
Foraging	3504 (52 %)	**40%**	3,411 (50 %)	3,426 (50 %)	3,467 (51 %)

* % Suitable Goshawk Habitat

** Target minimum is the minimum desired management goal for the amount of mature forest goshawk habitat within each zone. It provides a quick basis for comparison with existing conditions and those that would be created under each action alternative. In the case of nest and post-fledging zones, the Forest Plan provides direction regarding these minimums. The Forest Plan does not provide guidance for the foraging zone.

As seen in Table 3.2.4.2.3.3.a, nest zone target minimums are not met in either of the goshawk territories across all public ownerships. Post-fledging target minimums are only met in the Kenogama territory. These conditions which resulted from past activities and natural conditions would not be increased by the KRM project. They are also not decreased by project treatments.

Regeneration timber harvest in the KRM project is proposed in both foraging zones. Alternative B would have the greatest impact on both territories, followed by Alternative C. Alternative D would have the least impact.

Cumulative Summary of Impacts to Each Goshawk Territory:

In both territories, no harvest is planned on USFS land in the nesting and post-fledging zones. Habitat on NFS land is expected to improve in these zones as stands age.

In the Kenogama territory, foraging zone target minimums are met in all action alternatives. Alternative D maintains the most habitat, while Alternative B maintains the least.

In 5-10 years, which coincides with project implementation, suitable habitat conditions in the Kenogama foraging zone would improve (about 8%) due to stand aging.

In the Bass Lake territory, Beltrami County plans 37 acres of regeneration harvest in the foraging zone. Habitat minimums would continue to be met in the foraging zone after implementation of all action alternatives. Alternative D maintains the most habitat, while Alternative B maintains the least. Under Alternative D no regeneration harvest is planned on USFS land.

In 5-10 years, which coincides with project implementation, suitable habitat conditions in the Bass Lake foraging zone would improve (about 5%) due to stand aging.

3.2.4.2.3.4 -- Determination of effects:

Alternatives B, C, and D **may impact goshawks or their habitat, but will not likely contribute to a trend towards federal listing or loss of viability to the population or species.** This is due to the loss of habitat due to regeneration harvest. Habitat on NFS land is maintained above minimum requirements within zones where regeneration harvest occurs. The KRM project complies with the CNF Forest Plan (Table 3.2.4.2.3.4.a).

Table 3.2.4.2.3.4.a -- Forest Plan Compliance for Northern Goshawk

Forest Plan Guidance (PR# 72)	Compliance Met in Alternatives B, C, and D
O-WL-17 Maintain, protect or improve habitat for all sensitive species…including at the landscape level and site level by managing specifically for high quality potential habitat or known locations of sensitive species	Habitat requirements are met in all goshawk zones that have vegetation treatment proposed on NFS land
O-WL-32 Provide habitat for population goal minimum of 20-30 breeding pairs.	Contributes to maintaining habitat for goshawks
S-WL-8 Maintain/enhance suitable habitat in nesting zone; operating restrictions during nesting season	Contributes to maintaining habitat for goshawks
G-WL-8 Maintain suitable habitat in post-fledging zone; operating restrictions during nesting season	Contributes to maintaining habitat for goshawks

3.2.4.2.7 -- Black-backed Woodpecker

The black-backed woodpecker is a permanent resident of Northern Minnesota. It is a primary cavity excavator of live trees with heartrot or recently dead snags. The species is widespread but its distribution is sporadic due to its specific habitat and diet. The black-backed woodpecker is confined to mature, fire regulated, boreal and coniferous forest. Low population levels are maintained until the next wildfire occurs.

Environmental Baseline:

High quality habitat is created following large wildfires, with the retention of large patches of blackened snags following stand replacement fires. Presently, these types of fires rarely occur on the CNF, primarily due to fire suppression efforts and due to the past conversion of upland conifer forest types to deciduous forest types.

Most of the potential black-backed woodpecker habitat in the project area is jack pine, red pine, and swamp conifer forest types. Potential habitat for black-backed woodpeckers in the KRM project area is represented by the following management indicator habitats; upland spruce/fir, red/white pine, jack pine, and lowland black spruce/tamarack in the mature/old categories. Refer to the Management Indicator Habitat (MIH) Section 3.2.4.4 and tables in it for acres of potential habitat and changes due to project activities and forest aging in the project area.

Direct, Indirect and Cumulative Effects

Direct Effects:

Direct effects to black-backed woodpeckers due to project activities are unlikely to occur. Stands with suitable habitat and known black-backed woodpecker occurrences have a timing restriction to protect potential nesting birds. Also, all known nests are protected with a timing restriction (Appendix H of the EA).

Indirect Effects:

The KRM project has the potential to indirectly affect black-backed woodpeckers by reducing the amount of potential habitat by regeneration harvest or reducing the suitability through intermediate treatments (thinning). Table 3.2.4.2.7.a displays the amount of potential and future black-backed woodpecker habitat that would be treated in the KRM project.

Table 3.2.4.2.7.a-- Summary of acres proposed for treatment in Alternatives A, B, C, and D in potential and future black-backed woodpecker habitat.

Treatment Type *	Alt. A	Alt. B	Alt. C	Alt. D
Regeneration Harvest	**Acres**			
Jack Pine Clearcut	0	81	0	0
Red Pine Clearcut	0	351	14	4
Intermediate Harvest				
Red Pine Thinning	0	632	891	775
Red Pine Group Selection	0	0	65	65
Red Pine 2-aged Shelterwood	0	3	3	3
Jack Pine Thinning	0	139	139	0
White Spruce Thinning	0	58	58	58
Prescribed Fire				
Activity Fuels Underburn- Red Pine	0	43	169	169
Ecosystem Burning- Red/White Pine	0	0	278	278
TOTALS	0	1,307	1,617	1,352

* Stands that are clearcut would reduce the amount of currently suitable habitat.

Intermediate harvest partially removes the overstory to improve the growth, quality, vigor, and species composition of the stands. Thinning these stands degrades black-backed woodpecker habitat through removal of decadent trees, although it should be noted that several red pine stands proposed for thinning are currently too young to provide habitat for black-backed woodpeckers.

The greatest impact to black-backed woodpecker habitat would occur in the old jack pine MIH and the mature/old red/white pine MIHs. Under Alternative B, 81 acres of old jack pine is planned for regeneration harvest. Any clearcut harvest of old jack pine would prolong the lack of this preferred habitat type across the landscape. About 351 acres of red pine are proposed for clearcutting in Alternative B which would also impact habitat for black-backed woodpecker. Although some of these red pine stands are likely too young to currently provide habitat for black-backed woodpeckers. Alternatives C and D propose much less clearcutting in red pine and no clearcutting in jack pine (Table 3.2.4.2.7.a). Refer to the Management Indicator Habitat Section 3.2.4.4 for acres of potential habitat (mature/old red pine, jack pine) and changes due to project activities/forest aging in the project area.

The proposed activity fuels underburn in red pine in all three action alternatives has the potential to improve habitat for black-backed woodpeckers due to the potential for large snag creation. Ecosystem burning in red/white pine stands in Alternatives C and D also has the potential to improve habitat by creating large snags.

Overall, all three alternatives result in an increase in conifers due to type conversions and planting/seeding conifers. This would be a long-term benefit for black-backed woodpeckers. Alternative D impacts the least amount of habitat by harvesting but the most by burning, while Alternative B impacts the most habitat from harvesting but the least from burning. Alternative C impacts more habitat by harvesting than Alternative D, but less than Alternative B with the same burning as in Alternative D (Table 3.2.4.2.a).

Cumulative Effects
Past impacts:
About 298 acres of potential black-backed woodpecker habitat (based on current forest type and age) was harvested on NFS land in the project area since 2000. About 40 acres of potential habitat was harvested on LLBO land. An unknown amount of black-backed woodpecker habitat has been harvested on other ownerships over the last 10 years. So KRM EA proposals continue the past effects, except Alternative A does less.

Present impacts:
Currently, 35 acres of red pine are planned to be thinned on NFS land in the KRM project area from the RWRM EA.

Future impacts:
Alternative B would result in 432 acres of regeneration harvest; Alternative C would result in 14 acres of regeneration harvest; and Alternative D results in 4 acres of regeneration harvest in potential/future woodpecker habitat on the CNF.

LLBO plans to harvest/thin about 70 acres of potential habitat.

Beltrami County plans to thin about 116 acres of red pine, seed tree cut about 14 acres of tamarack, and clearcut about 32 acres of jack pine in the project area in the next 5 years.

The cumulative effects of these harvest activities are likely to contribute to a reduction in the overall habitat quantity and quality for black-backed woodpeckers in the project area.

Determination of Effects:
Alternatives B, C, and D **may impact individuals or habitat of black-backed woodpeckers, but would not likely contribute to a trend towards federal listing or loss of viability to the population or species.** Although 81 acres of old jack pine would be clearcut under Alternative B, Forest Plan Standard S-WL-10 would not apply since this harvest would occur in Decade 2 of the Forest Plan. Alternatives C and D result in very minor reductions in potential habitat. Also, timing restrictions for nesting birds would be implemented. The proposed prescribed burning could improve habitat. The KRM project results in an overall increase in conifer acres. The KRM project complies with the CNF Forest Plan (Table 3.2.4.2.7.b).

Table 3.2.4.2.7.b. Forest Plan compliance for black-backed woodpecker

Forest Plan Guidance	Compliance Met in Alternatives B, C, and D
O-WL-25 Maintain/improve nesting/foraging habitat by managing towards LE objectives for mature/older conifer forest	Objective is being met at the Forest level. Alts. C and D move the most towards this objective.
O-WL-26 Amount/distribution of dead/dying trees represents patterns/amounts that would result from natural disturbances. If not, may need to emulate through prescribed fire or other treatments.	Proposed ecosystem burning in Alts. C and D help move towards this objective.
G-WL-20 Retain 6-10 jack pine/acre in regeneration harvests in mixed conifer stands	Yes, all alternatives
S-WL-10 Maintain at least 5,300 acres of mature/older jack pine in Decade 1	Yes, all alternatives. Alt. B proposes regeneration harvest in old jack pine in Decade 2.

3.2.4.3 – MANAGEMENT INDICATOR SPECIES
ALTERNATIVES A-D

Management indicator species are those species that are monitored over time to assess the effects of management activities on their populations. MIS monitoring also indicates the effects on populations of other species with similar habitat needs, which represent major biological communities. NFMA regulations [CFR 36, part 219.19, paragraph a-6] state that "Population trends of management indicator species would be monitored and relationships to habitat changes determined." This direction applies specifically to the forest planning process, but also has implications for project planning. Analysis of effects to gray wolf, bald eagle, northern goshawk and white pine are located in the Threatened and Endangered, Sensitive Species, and Vegetation Sections.

Gray Wolf

Refer to the wolf section (3.2.4.1.2) in the Threatened and Endangered Species Section for population status and effects analysis.

Bald Eagle

Refer to the bald eagle section (3.2.4.2.2) in the Sensitive Species Section for population status and effects analysis.

Northern Goshawk

Refer to the northern goshawk section (3.2.4.2.3) in the Sensitive Species Section for population status and effects analysis of known nest territories in the KRM project area.

White Pine

According to the Forest Plan (page 2-57), the historic condition of upland forest-wide vegetation composition consisted of 6% white pine. The CNF currently consists of about 1% white pine. Table 3.2.4.3.a displays the current acreage and age classes of white pine in the KRM project area. A forest-wide vegetative objective is to increase white pine. Under Alternatives B and C about 95 acres would be planted with white pine. Under Alternative D, 55 acres would be planted with white pine. (Section 3.1 alternative analyses include effects to populations of white pine, scattered throughout the analysis.)

Table 3.2.4.3.a – White pine age class distribution on NFS land in the KRM project area.

Successional Stage	Current Condition
Young (0-9 years)	3
Sapling-pole (10-49 years)	23
Mature-old (50-119 years)	171
Old-old growth (120 + years)	34
Total acres	**231**

3.2.4.4 – MANAGEMENT INDICATOR HABITATS (MIH)

The Forest Plan (PR# 72, USFS 2004a pp. 2-22, 2-23, 2-32) provides guidance regarding vegetation composition and structure. More specific guidance relating to Management Indicator Habitats (MIH) 1-9 for each Landscape Ecosystem (LE) can be found on pages 2-55 to 2-80. By moving towards objectives for these MIHs the CNF would move toward long-term desired conditions for the amount, quality, and distribution of MIHs and their associated wildlife and plant species. Detailed descriptions of the forest types and ages that comprise each MIH are found in Appendix C of the Forest Plan. The KRM project area is within 5 LE's; Dry Mesic Pine/Oak (DMPO), Dry Mesic Pine (DMP), Dry Pine (DP), Mesic Northern Hardwoods (MNH), and Tamarack Swamp (TS). The following analysis compares how well the KRM project incorporates landscape-scale forest-wide direction regarding vegetation composition, age, and structure. **Very minor changes in MIHs would occur in DMP and TS LE's; therefore they will not be discussed further. No timber harvest would occur in MNH LE; therefore this LE will not be discussed further**.

3.2.4.4.1 -- DMPO LE

At the project level there are several changes in MIHs in the DMPO LE as a result of the KRM project. The major changes would occur in the aspen/birch, red/white pine, and jack pine MIHs (Tables 3.2.4.4.1.a, 3.2.4.4.1.b, and 3.2.4.4.1.c). All other changes in MIHs are minor changes at the LE scale.

Table 3.2.4.4.1.a -- MIH-Young DMPO LE in KRM project area after implementation of Alts. A - D + 10 yrs.

MIH	Young					
	Existing Condition	FP Obj.*	KRM ALT A + 10 yrs	KRM ALT B + 10 yrs	KRM ALT C + 10 yrs	KRM ALT D + 10 yrs
Upland Forest	1,063	-	0	1,240	683	321
Upland Deciduous	842	-	0	777	585	249
N. Hardwoods	0	-	0	23	23	23
Aspen/Birch	842	-	0	**754**	**563**	**227**
Upland Conifer	221	+	0	463	97	71
Upland Spruce/Fir	19	-	0	14	14	16
Red/White Pine	48	m	0	**291**	**46**	**43**
Jack Pine	154	+	0	**158**	**37**	**12**
Lowland BS-Tamarack	6	+	4	14	14	14

* This is the Forest Plan Objective for MIHs in Decade 2: "+" increase, "-" decrease, and "m" for maintain.

Table 3.2.4.4.1.b -- MIH-Mature DMPO LE in KRM project area after implementation of Alts. A - D + 10 yrs.

MIH	Mature					
	Existing Condition	FP Obj. *	KRM ALT A + 10 yrs	KRM ALT B + 10 yrs	KRM ALT C + 10 yrs	KRM ALT D + 10 yrs
Upland Forest	7,434	-	7,102	6,741	7,104	7,103
Upland Deciduous	5,707	-	5,086	4,989	5,139	5,091
N. Hardwoods	3,417	+	3,382	3,767	3,808	3,615
Aspen/Birch	2,290	-	1,602	**1,087**	**1,195**	**1,375**
Upland Conifer	1,728	+	2,016	1,752	2,002	2,012
Upland Spruce/Fir	172	-	394	394	394	394
Red/White Pine	1,544	+	1,588	**1,323**	**1,573**	**1,583**
Jack Pine	12	-	34	34	34	34
Lowland BS-Tamarack	1,173	-	1,171	1,171	1,171	1,171

* This is the Forest Plan Objective for MIHs in Decade 2: "+" increase, "-" decrease, and "m" for maintain.

Table 3.2.4.4.1.c -- MIH-Old DMPO LE in KRM project area after implementation of Alts. A - D + 10 yrs.

MIH	Old Existing Condition	FP Obj. *	KRM ALT A + 10 yrs	KRM ALT B + 10 yrs	KRM ALT C + 10 yrs	KRM ALT D + 10 yrs
Upland Forest	3,107	+	5,416	4,606	4,749	5,166
Upland Deciduous	2,543	-	4,274	3,607	3,630	4,024
N. Hardwoods	384	+	637	650	650	637
Aspen/Birch	2,159	-	3,577	**2,869**	**2,892**	**3,300**
Upland Conifer	565	+	1,142	999	1,118	1,142
Upland Spruce/Fir	48	+	140	114	117	140
Red/White Pine	372	+	855	**795**	**855**	**855**
Jack Pine	144	-	147	**91**	**147**	**147**
Lowland BS-Tamarack	241	+	364	364	364	364

* This is the Forest Plan Objective for MIHs in Decade 2: "+" increase, "-" decrease, and "m" for maintain.

Young aspen/birch decreases under all action alternatives, but decreases the greatest under Alternative D. Alternative D followed by Alternative C best meet this MIH which is to reduce the amount of young aspen/birch.

For young red/white pine, Alternative B does not help to meet this MIH objective which is to maintain (not to increase) young red/white pine. Alternative B creates nearly 300 acres of young red/white pine. Alternatives C and D both maintain young red/white pine.

For young jack pine, Alternative B helps to meet this MIH objective by at least maintaining young jack pine. Both Alternatives C and D result in a large reduction in the amount of young jack pine. These 2 alternatives do not help to meet this MIH objective which is to increase the amount of young jack pine in this LE.

For mature forest, all three alternatives result in a decrease in mature aspen/birch. This helps to meet LE objectives for mature aspen/birch. For mature red/white pine, Alternative B does not help to increase the amount of this MIH. Alternative B results in a reduction of mature red/white pine. Both Alternatives C and D slightly increase mature red/white pine.

For old forest, all three alternatives harvest in old aspen/birch, which would decrease the amount of this type. This helps to meet LE objectives for old aspen/birch. However after implementation there is still an overall increase in old aspen/birch due to ingrowth from the younger age class.

For old red/white pine, all three alternatives result in an increase in this MIH from existing conditions. Alternative B results in the smallest increase, while Alternatives C and D result in the same increase. Therefore these 2 alternatives best meet this LE objective for old red/white pine.

Alternative B best meets LE objectives for old jack pine by reducing the acreage of old jack pine. Alternatives C and D maintain old jack pine. This does not help to meet LE objectives for old jack pine.

3.2.4.4.2 -- DP LE

Within the DP LE there are some minor changes in the jack pine and red/white pine MIHs within the KRM project area (Tables Tables 3.2.4.4.2.a, 3.2.4.4.2.b, and 3.2.4.4.2.c).

Table 3.2.4.4.2.a -- MIH-Young DP LE in the KRM project area after implementation of Alts A – D + 10 yrs.

MIH	Young					
	Existing Condition	FP Obj.*	KRM ALT A + 10 yrs	KRM ALT B + 10 yrs	KRM ALT C + 10 yrs	KRM ALT D + 10 yrs
Upland Forest	65	-	0	67	16	15
Upland Deciduous	35	-	0	16	16	15
N. Hardwoods	0	m	0	0	0	0
Aspen/Birch	35	-	0	16	16	15
Upland Conifer	30	-	0	52	0	0
Upland Spruce/Fir	0	m	0	0	0	0
Red/White Pine	8	-	0	**27**	**0**	**0**
Jack Pine	22	-	0	**25**	**0**	**0**
Lowland BS-Tamarack	0	m	0	0	0	0

* This is the Forest Plan Objective for MIHs in Decade 2: "+" increase, "-" decrease, and "m" for maintain.

Table 3.2.4.4.2.b -- MIH-Mature DP LE in the KRM project area after implementation of Alts A – D + 10 yrs.

MIH	Mature					
	Existing Condition	FP Obj. *	KRM ALT A + 10 yrs	KRM ALT B + 10 yrs	KRM ALT C + 10 yrs	KRM ALT D + 10 yrs
Red/White Pine	96	+	95	**68**	**95**	**95**

* This is the Forest Plan Objective for MIHs in Decade 2: "+" increase, "-" decrease, and "m" for maintain.

Table 3.2.4.4.2.c -- MIH-Old DP LE in the KRM project area after implementation of Alts A – D + 10 yrs.

MIH	Old					
	Existing Condition	FP Obj. *	KRM ALT A + 10 yrs	KRM ALT B + 10 yrs	KRM ALT C + 10 yrs	KRM ALT D + 10 yrs
Upland Forest	280	-	368	343	367	368
Upland Deciduous	94	+	155	155	155	155
N. Hardwoods	0	m	12	12	12	12
Aspen/Birch	94	+	143	142	142	143
Upland Conifer	185	-	213	188	213	213
Upland Spruce/Fir	0	m	1	1	1	1
Red/White Pine	13	m	19	19	19	19
Jack Pine	172	-	193	**168**	**193**	**193**
Lowland BS-Tamarack	7	+	33	33	23	23

* This is the Forest Plan Objective for MIHs in Decade 1: "+" increase, "-" decrease, and "m" for maintain.

Alternative B results in additional young jack pine and young red/white pine while Alternatives C and D result in no young jack pine or young red/white pine. Alternatives C and D helps to meet the MIH objectives for this LE which is to decrease the amount of young jack pine and young red/white pine.

For mature red/white pine, Alternative B results in a reduction of this MIH while Alternatives C and D maintain this MIH. Alternative B does not meet this LE objective which is to increase the acreage of mature red/white pine.

For old jack pine, Alternative B helps to meet the MIH objectives for this LE by reducing the acreage of old jack pine. Alternatives C and D do not help to meet this objective because they maintain the amount of old jack pine in this LE.

3.2.4.4.3 -- Cumulative Effects

Cumulatively, Forest Plan monitoring (PR# 145, USFS 2007) of MIHs 1-9 indicates varying trend departures in habitat objectives in the DMPO and DP LEs across the Forest. Other ownerships are not part of this Forest Plan level analysis.

In the DMPO LE (% are from the 2006 Forest Plan Monitoring Report (PR# 145)):

Forestwide, the amount of old and older upland deciduous forest, especially in the aspen-birch type, has increased (34%) rather than decreased. The KRM project contributes to improving this trend. Alternative B reduces the highest amount of old aspen/birch followed by Alternative C and then D.

Forestwide, the amount of young upland conifer has decreased (49%) rather than increased. Alternative B of the KRM project best contributes to improving this trend although this increase should come from young jack pine, not young red/white pine. Alternatives C and D contribute very little to improving this trend due to no regeneration harvest in jack pine.

Forestwide, the amount of young jack pine has decreased (39%) rather than increased. Alternative B of the KRM project best contributes to improving this trend. Alternatives C and D contribute very little to improving this trend due to no regeneration harvest in jack pine.

In the DP LE (% are from the 2006 Forest Plan Monitoring Report (PR# 145)):

Forestwide, the amount of old and older upland conifer, especially in the red and white pine types, has decreased (17%) rather than being maintained. All three alternatives in the KRM project maintain the current level of old red/white pine, since there are no activities (the change from 13 to 19 acres is due to ingrowth from a younger age class).

Forestwide, the amount of young jack pine has decreased (30%) rather than increased. Alternative B helps to improve this trend by creating additional young jack pine. Alternatives C and D create no new young jack pine. In Decade 2 of the Forest Plan, the MIH objective switches to decrease the amount of young jack pine. Alternatives C and D best meet this objective by creating no new young jack pine.

Overall, the KRM project does not contribute to current negative trends of MIHs 1-9 in the LE's within the KRM project area. At the forest-wide scale the cumulative impact of the KRM project with other projects implemented across the forest would determine over time if objectives are met. By meeting these landscape scale objectives, habitat for wildlife would be maintained/increased across the CNF. Forest-wide monitoring of MIHs would be important for identifying trends.

3.2.4.5 – LARGE MATURE FOREST PATCHES, UPLAND INTERIOR HABITAT, and MANAGEMENT INDUCED UPLAND EDGE HABITAT (MIH 11, 12, 13)

Landscape Scale Habitat- MIH 11-13

The Forest Plan (PR# 2, USFS 2004a pp. 2-23, 2-24, 2-33) provides guidance regarding spatial distribution of forest vegetation. Patch size, edge, and forest or habitat fragmentation are elements of spatial distribution which affect a variety of sensitive species. The following analysis compares how well the KRM project incorporates landscape-scale forest-wide direction regarding patch size, edge, and habitat fragmentation.

3.2.4.5.1 -- Large, mature upland patches (MIH 13):

The KRM project area currently contains (entirely within, partially within, or intersecting the project area) 9 mature upland patches of at least 300 acres each in size, as shown in the Table 3.2.4.5.1.a.

Table 3.2.4.5.1.a -- Mature, upland patches in the KRM project area (2010).

Patch Size Class		Existing Condition (2010)	
Size	Acre Class	No.	Acres
Small	1-40	220	2,044
Moderate	41-100	29	1,807
	101-300	22	3,598
	Subtotal moderate	**51**	**5,405**
Large	301-500	3	1,349
	501-1000	4	2,904
	Subtotal large	**7**	**4,253**
Very Large	1001-2500	2	3,186
	2501-5000	0	0
	5001-10000	0	0
	Subtotal very large	**2**	**3,186**

Direct, Indirect, and Cumulative Effects

All of the alternatives are analyzed to the year 2015. Due to forest aging, Alternative A (no action) results in the development of 2 large patches and 1 very large patch within the project area as shown in Table 3.2.4.5.1.b. Alternatives B, C, and D maintain this additional very large patch, but at a slightly smaller size. Alternatives C and D also maintain the 2 additional large patches. Alternative B results in a reduction in the number of large patches (Table 3.2.4.5.1.b).

Table 3.2.4.5.1.b -- Mature upland patches in the KRM project area by alternative (year 2015).

Patch Size Class		Alt. A		Alt. B		Alt. C		Alt. D	
Size	Acres	No.	Acres	No.	Acres	No.	Acres	No.	Acres
Small	1-40	199	1,765	220	1,993	204	1,817	200	1,752
Moderate	41-100	29	1,834	28	1,733	29	1,892	30	1,971
	101-300	18	3,011	19	3,297	17	2,833	18	3,014
	Subtotal moderate	**47**	**4,845**	**47**	**5,030**	**46**	**4,725**	**48**	**4,985**
Large	301-500	4	1,506	2	688	5	1,656	4	1,340
	501-1000	5	3,599	4	2,985	4	2,985	5	3,494
	Subtotal large	**9**	**5,105**	**6**	**3,673**	**9**	**4,641**	**9**	**4,834**
Very Large	1001-2500	3	5,279	3	4,914	3	5,030	3	5,030
	2501-5000	0	0	0	0	0	0	0	0
	5001-10000	0	0	0	0	0	0	0	0
	Subtotal very large	**3**	**5,279**	**3**	**4,914**	**3**	**5,030**	**3**	**5,030**

Alternatives B, C, and D propose differing harvest treatments and amounts within 6 of the current large patches. The proposed harvest treatments include thinning, individual tree selection, group selection, 2-aged shelterwood, and even-aged regeneration harvests. Even-aged harvest treatments that do not maintain at least 50% canopy cover within these patches result in a reduction in patch size, number, and acres.

Overall, Alternative D best maintains large patches in the project area followed by Alternative C. Alternative B least maintains existing patches. All three alternatives result in the creation of an additional very large patch.

Cumulatively across the Forest, all three action alternatives and the no action alternative would contribute to Forest Plan Standards, Guidelines, and Objectives by contributing to maintaining acres, size, and number of large patches above Forest Plan requirements (Table 3.2.4.5.1.c).

Table 3.2.4.5.1.c-- Forest Plan compliance for large, mature upland patches.

Forest Plan Guidance	Compliance Met by Alternatives	Comments
O-VG-19 Maintain/increase +300 acre patches	Contributes to objective, all Alternatives	Alt. A is the best but of the action alternatives, Alt. D best contributes; then Alt. C. Alt. B contributes the least. All 3 action alternatives result in an additional very large patch
O-VG-22 Manage patches for mature forest characteristics	Meets objective for patches contained in project area, all Alternatives	
G-VG-1 Maintain 19 patches +1,000 acres Forest-wide	Meets Guideline, all Alternatives	28 patches of +1,000 acres are maintained Forest-wide
S-VG-2 Maintain 85,000 acres of patches +300 acres in size	Meets Standard, all Alternatives	+117,000 acres of patches >300 acres are maintained
S-VG-3 In mature/older upland forest managed for +300 acre patches, vegetation treatments would maintain 50% canopy closure and large trees	Meets Standard in patches that would continue to be managed for large mature upland forest	

3.2.4.5.2 -- Management induced edge habitat and Upland interior forest habitat (MIH 11 and 12):
MIH 11 provides objectives to reduce the amount of management created edge while maintaining small patches and edge habitat. MIH 12 provides for interior forest habitat in a variety of upland and lowland vegetative communities. Even-aged regeneration harvest reduces patch size, increases edge, and removes or reduces interior forest conditions. Table 3.2.4.5.1.b indicates the affect of even-aged regeneration harvests in patches of a variety of sizes within the KRM project area, with more large/very large patches meaning less edge effect and more interior acreage.

Alternative D creates the least amount of edge followed by Alternative C. Alternative B creates the most edge. All three alternatives result in the creation of an additional very large patch. This results in less edge and more interior forest.

3.2.4.6 – NEOTROPICAL MIGRATORY BIRDS
Northern Minnesota and the CNF are located within the Boreal Hardwood Transition Zone that occurs between the mixed hardwood forest to the south and the boreal forests to the north. Twenty five neotropical migratory bird species on the Forest are associated with this zone. Alternative A would not impact migratory birds because no vegetation treatment would occur.

ALTERNATIVES B, C, and D
Effects to habitat utilized by migratory birds are discussed in detail in other sections of this document and in the BE for this project. The sections of these documents of interest include; northern goshawk, black-backed woodpecker, red-shouldered hawk, black-throated blue warbler, and MIHs 1-9 and 11-13. All of these species prefer mature forest types. As stated in the MIH 13 section, all three action alternatives and Alternative A result in the development of an additional very large patch. This would benefit migratory birds that prefer interior forest. Conversely, migratory birds associated with young forest would benefit from the proposed regeneration harvest.

3.2.4.7 – SELECTED GAME SPECIES
Game species of interest in the project area include ruffed grouse, white-tailed deer, and woodcock. All three species benefit from increases in young aspen-birch. Due to forest aging, Alternative A would result in an overall reduction in habitat.

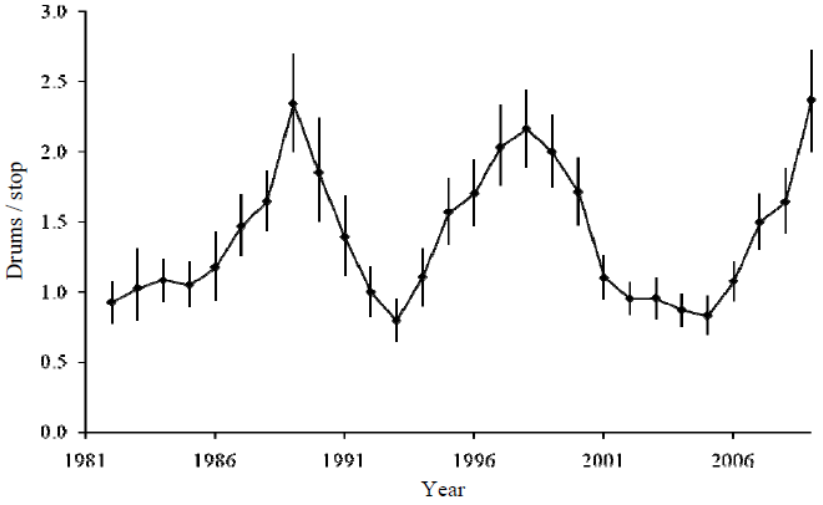
3.2.4.7.1 -- Ruffed Grouse

Ruffed grouse on the CNF appear to reflect similar trends to those across northern Minnesota, with a 10-year cycle being characteristic of their population dynamics. Figure 3.2.4.7.a displays recent ruffed grouse counts in the northeast survey area including the CNF (PR# 208, MN DNR 2009).

Ruffed grouse would benefit from the 774 acres (635 aspen) in Alternative B, 497 acres (392 aspen) in Alternative C, and 243 acres (187 aspen) in Alternative D of aspen-birch forest type treated by regeneration harvest. Alternative C best manages aspen stands for ruffed grouse by managing aspen stands as patch clearcuts in the Meadow Lake and Tower Lake Hunter Walking Trails (HWT). Large even-aged aspen stands in these areas would be patch cut (< 10 acre patches) to begin to create several smaller stands. Alternative D proposes patch cuts only in the Tower Lake HWT. Alternative B proposes stand clearcutting in these aspen stands in the Meadow Lake HWT. Ruffed grouse would not benefit as much from these large clearcuts (> 10 acres), because they are one age class not a series of age classes as in the patch clearcuts.

Cumulatively, ruffed grouse habitat would be maintained across the landscape where recent regeneration harvest of aspen-birch has occurred. Although the KRM project provides for the manipulation of grouse habitat through regeneration harvest of aspen-birch forests, and conversion of some aspen-birch forests to increase conifer composition on the CNF per LE objectives, these activities are not proposed at such a scale as to substantially affect grouse population levels.

Figure 3.2.4.7.a -- Ruffed grouse drums per stop in northeast zone of northern Minnesota



3.2.4.7.2 -- White-tailed Deer

About 459 acres in Alternative B, 38 acres in Alternative C, and 4 acres in Alternative D of deer thermal cover would be treated using regeneration harvest treatment types. Due to forest aging, Alternatives C and D result in an increase in the acres of deer thermal cover by 2015. About 774 acres (635 aspen) in Alternative B, 497 acres (392 aspen) in Alternative C, and 243 acres (187 aspen) in Alternative D of aspen-birch forest types would be treated by regeneration harvest. There is an overall reduction in deer foraging habitat in all three alternatives due to forest aging by 2015 (Table 3.2.4.7.2.a).

Table 3.2.4.7.2.a -- Deer habitat in the KRM project area and the change in habitat resulting from Alternatives B, C, and D in year 2015.

Indicators	Existing Condition 2010		Alt B 2015		Alt C 2015		Alt D 2015	
	Acres	%	Acres	%	Acres	%	Acres	%
Deer foraging habitat: Acres and percent of aspen-birch forest <25 years old *	4,506	20	4,141	18	3,864	17	3,610	16
Deer thermal cover: Acres and percent of deer thermal cover (upland and lowland conifers of appropriate forest types/ages; per project record) **	5,670	23	5,448	22	5,870	24	5,903	24

* % of total upland forests on NF lands;
** % of total forest on NF lands;

Cumulatively, deer foraging habitat would be maintained across the landscape where recent regeneration harvest of aspen-birch has occurred. Although the KRM project provides for the manipulation of deer habitat through regeneration harvest of aspen-birch forests, and conversion of some aspen-birch forests to increase conifer composition on the CNF per Landscape Ecosystem objectives, these activities are not proposed at such a scale as to substantially affect deer population levels.

3.2.4.7.3 -- American Woodcock

American woodcock on the CNF have been declining along with the national long-term population trend. There is very little timber harvest within riparian management zones on the CNF. Alternatives B and C may benefit woodcock through regeneration harvest of aspen-birch and maintaining existing openings. Alternative D would have less beneficial effect due to reduced acreage of regeneration harvest in aspen-birch. Cumulatively, woodcock habitat would be maintained across the landscape were recent regeneration harvest of aspen-birch occurs near riparian areas and wildlife openings are maintained.

3.2.4.8 -- OTHER WILDLIFE SPECIES

OSPREY

Ospreys have a worldwide distribution and are a common resident of northern Minnesota. The MN DNR surveyed the state for ospreys in 2004, which resulted in an estimated 577 territories and about 1,200 birds (PR# 209, Shultz 2009). Ospreys are common on the large lakes on the CNF. There are two known nests in the KRM project area.

Alternatives A and D would not impact these known nests because no timber harvest activities would occur near them. One nest is adjacent to 2 aspen stands proposed for clearcutting in Alternatives B and C. The nest site would be protected with buffers and timing restrictions (Appendix H in the EA) so impacts should be minimal. No cumulative effects are expected.

3.2.4.9 -- WILDLIFE OPENINGS

There are 144 wildlife openings totaling about 225 acres in the KRM project area that are being considered for management. Alternatives B and C propose to maintain 80 openings (142 acres); naturally regenerate 40 openings (48 acres) to adjacent forest types; and plant 24 openings (35 acres) with various trees and/or fruiting shrubs. Alternative D proposes to maintain 76 openings (140 acres); naturally regenerate 40 openings (48 acres); and plant 28 openings (37 acres) with various trees and/or fruiting shrubs.

Alternative A would keep the openings in their current condition. Over-time they would succeed to the surrounding forest type and/or brush. All three action alternatives would benefit wildlife by maintaining diversity in forest stands through opening maintenance and planting/seeding of various trees/fruiting shrubs.

3.3 - GATHERING AND TRADITIONAL USES

3.3.1. - SCOPE OF THE ANALYSIS

Spatial framework:

Effects for traditional uses will be discussed in the KRM EA area where the treatments are located on NFS lands, since this is where Forest Service vegetation management can impact species composition, specific plants and animals, and vegetation ages. Each of these features a different role in supplying various traditional resources. (Section 3.7 "Recreation" has some discussion of the related hunting.)

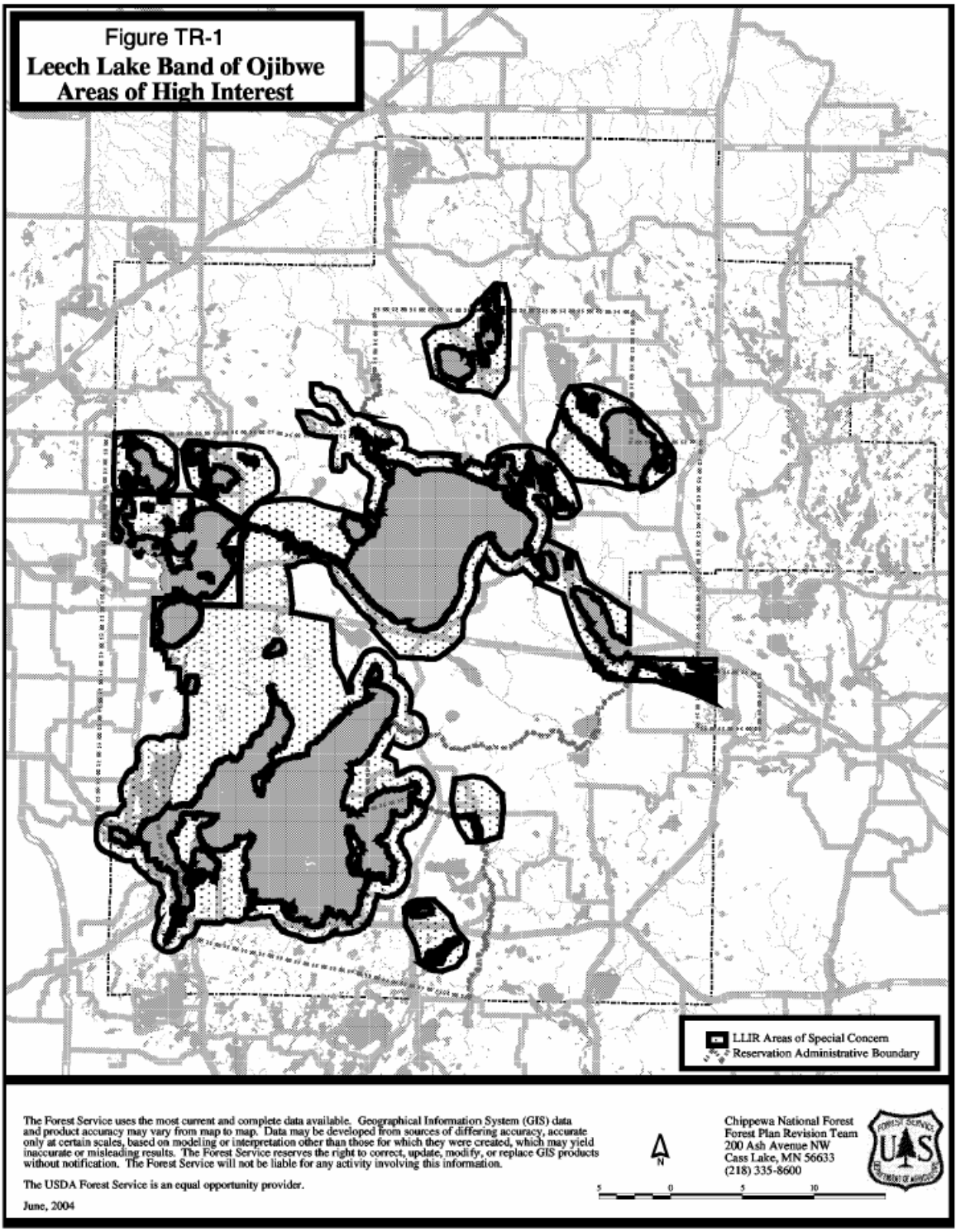
Timeframe:

Past effects consider work within the last 5 years (2005 to 2009 where we have data from the FACTS database), a general look at the last couple of decades where past unspecified treatments have resulted in the existing conditions of small vegetation, and a general look at the last 150 years (age-class table) for trees and the overstory. The last few decades and the last 150 years were used since they can show the long-term results of management and natural happenings on the landscape. Together they are a good listing of the current vegetation condition. Future effects consider the next 5 to 25 years because that is how long impacts to various traditionally gathered resources may last, e.g. blueberries would last roughly 5 years without further treatments and balsam fir boughs in treated stands would be on small enough trees to gather for roughly 25 years. Timber would last for 100 years or more, but after 25 years it is hard to anticipate what would be happening. For purposes of this discussion, long-term effects are those at least 10 years in the future and short-term effects are those 10 years or less in the future being most noticeable in the first 5 years.

3.3.2. - MGMT DIRECTION AND FOREST PLAN CONSISTENCY

The EIS and associated documents for the Forest Plan revision (PR# 72a) contain several items that deal indirectly or directly with gathering and traditional uses. Most of the KRM EA area is in the LLBO Areas of High Interest.

Map 3.3.2.a -- Leech Lake Band of Ojibwe Areas of High Interest (FP, page 2-37)



3.3.3. - EXISTING CONDITION and DIRECT/INDIRECT EFFECTS SORTED BY ISSUE OR TOPIC

One key issue and two non-key issues listed in Section 1.6 of this EA pertain to traditional resources:

Key Issue 2. Traditional Resources and Uses:

The Leech Lake Band of Ojibwe has stated that managing according to the proposed alternatives results in the Forest not meeting Trust Responsibilities and is showing a lack of respect for LLBO traditional resources and gathering rights. (PR# 239v Comments 19.5, 19.6, 19.7, and 19.17; PR# 270 Comments 24.4 and 24.5; PR# 271/271a Comment 25.1; PR# 340 Comments 37.2, 37.4, 37.7, 37.8, 37.9, and 37.17; and PR# 375 Comments 40.3, 40.4, 40.11, 40.12, 40.13, and 40.19)

Indicators

Acreage and number of stands in which historic, traditional use is potentially precluded by harvesting.
Acreage and number of stands in which historic, traditional use is potentially undesirably changed by harvesting.
Effects of treatments or lack of treatments on traditionally gathered resources.
Number of stands deferred, modified, or retained that are mentioned by the LLBO as traditional gathering sites.
Acres of clearcutting changed to other treatments that maintain structure, age, and species composition or that maintain "ecological function" (Comments 37.4 and 40.5).
Acres of harvest treatments changed to less intensive methods between alternatives.
Acres of harvest treatments deferred between alternatives.
Acres of mature red pine harvest and type of harvest (Comment 19.3).
Acres of harvesting in sugar maple stands (Comment 19.6).
Acres of row thinning that decrease diversity (Comment 19.2).
Acres of mature jack pine clearcut.
Acres treated for increased blueberry production (Comments 5.1, 14.4, and 25.1).
Treatments within ¼ mile of tribal lands.

Harvesting, roads, and other vegetation management activities, especially in riparian zones or near wetlands, may cause water quality/visual problems. (PR# 340 Comments 37.2 and 37.11 and PR# 343 Comment 38.4.)

Indicators:

Acres, number of stands, and types of harvesting within 200 feet of riparian areas or wetlands.
Effects from this harvesting on water quality (Visual is in Section 3.12).

Harvesting near the Mississippi River may negatively affect wild rice. (PR# 340 Comment 37.11 and PR# 375 Comment 40.8.)

Indicators:

Acres of harvesting along the Mississippi River.
Effects on wild rice from this harvesting.

Information regarding local gathering and traditional use is obtained from direct meetings with the LICs and DRM, the Chippewa NF Traditional Resources Inventory, and a report on the topic prepared by McAvoy and Shirilla in 2003 (PR# 71). These sources document the broad usage of traditional use and the importance of "place".

The primary people gathering these resources are members of the Leech Lake Band of Ojibwe. The KRM EA area contains a large population of Band members and is heavily used for traditional resources. They gather from this project area and a large area of the reservation and District around it, depending on the particular resource. Much of the Kitchi EA area is in Leech Lake Band Areas of High Interest (See Map 3.3.2.a). There are four Local Indian Councils (Cass River, Cass Lake, Mission, and Sugarbush) and two communities (Cass Lake and Pennington) in or adjacent to the KRM project area. There are also small groups of tribal members scattered in the area, e.g. Flora Lake, Lost Lake, Buck Lake, west of Big Lake, and Knutson Dam. They gather heavily from this project area and

a large area of the reservation and District around it, depending on the particular resource. (Section 3.7 "Recreation" has some discussion of the related hunting.)

Most traditional gathering is done on non-tribal lands, since there are only 92 tracts, totaling about 2,753 acres, out of the 81,000 acres in the KRM EA area. Almost the entire KRM EA area is inside the reservation boundary. In the KRM EA area there are a wide abundance of traditionally gathered resources and uses.

Appendix C (Response to Comments) lists all of the comments received from the Leech Lake Band of Ojibwe. Each of the comments was reviewed and utilized in the design of the alternatives or in the analysis.

A wide range of gathering occurs in the KRM EA area and is considered through the remainder of this section (3.3), including the relationship of the issue/indicators, GIS database information, and species/uses tables to gathering.

The following proposed projects do not affect gathering, so in this section they would either not be dealt with or would be mentioned only briefly:

New parking lot for Lake Andrusia Boat Landing. This would make the parking safer but is not expected to increase the usage of the lake, thus no effects on gathering or traditional uses.

Enlarged parking lot for Lake Winnibigoshish Boat Landing. This would make the parking larger to handle the cars that now park along the road or in other undesirable locations; but is not expected to increase the usage of the lake, thus no effects on gathering or traditional uses.

Enlarged parking lot for Big Lake Boat Landing. This would make the parking larger to handle the cars that now park along the road or in other undesirable locations; but is not expected to increase the usage of the lake, thus no effects on gathering or traditional uses.

Temporary roads. These roads are constructed just to reach from existing roads to stands that are being harvested. In total there are only 5 to 7 of them totaling 0.45 to 0.65 miles. This small acreage is unlikely to affect gathering or traditional uses.

Rehabilitate a gravel pit. This is a highly disturbed site, so the additional disturbance is unlikely to have cumulative effects on the pit or resources in it.

Construction of Star Island Toilet. The site for this toilet is highly disturbed. It has never been mentioned as a gathering site. The new toilet would just keep the site cleaner. It would not increase use of the site.

3.3.3.1 -- Traditional Resources - Treatments within ¼ mile of tribal lands

3.3.3.1.1 -- Existing Condition - Treatments within ¼ mile of tribal lands

In past meetings there has been discussion about tribal lands and cutting near tribal lands. There is some opposition to harvesting near tribal lands.

Key Issue 2. Traditional Resources and Uses:

The Leech Lake Band of Ojibwe has stated that managing according to the proposed alternatives results in the Forest not meeting Trust Responsibilities and is showing a lack of respect for LLBO traditional resources and gathering rights.

Indicators

Treatments within ¼ mile of tribal lands.

3.3.3.1.2 -- Direct/Indirect Effects - Treatments within ¼ mile of tribal lands

3.3.3.1.2.1 -- Alternative A - Treatments within ¼ mile of tribal lands
Under Alternative A, there would be no treatments within ¼ mile of tribal lands.

3.3.3.1.2.2 -- Alternative B - Treatments within ¼ mile of tribal lands
There are 33 treated stands (398 acres) plus two new parking lots and 2 temporary roads within ¼ mile of tribal lands (PR# 398). Of these, 3 are clearcuts (26 acres), 4 are group selection cuts (179 acres), 8 are thinnings (167 acres), 6 are maintained wildlife openings (11 acres), 4 are planted wildlife openings (5 acres), and 8 are natural regeneration of wildlife openings to trees (11 acres). These treatments are all in line with Forest Plan direction.

The clearcuts are prescribed to regenerate older aspen and paper birch which is beginning to rot, adding 24 acres of young jack pine and 2 of aspen. The LICs are concerned that one of the stands is used for traditional resources and 2 of the stands are near Mission community where harvesting is not desired and where the jack pine may increase the fire hazard. Other potential negative effects to traditional resources would be the same as mentioned in Section 3.3.3.3. However, the conversion to jack pine would incorporate "green" fuel breaks around the stands to lessen the hazard.

The group selection cuts are designed to increase the amount of white pine adjacent to the Mississippi River in the future, by planting it in the openings (29 acres of white pine). Three of the stands are beginning to be converted from aspen to northern hardwoods by the harvesting (125 acres). These hardwoods are better long-lived species by the river. Since there would be thinning between the groups; the conversion to northern hardwoods would be fairly complete. The LICs and DRM are concerned over harvesting in northern hardwoods, the visual conditions from harvesting this close to the river, and traditional gathering in some of these stands. However, the harvesting would be designed to be almost unnoticeable from the river (meeting the SIO of HIGH) and mainly aspen and paper birch would be harvested. The thinning between groups would disturb most of the stand area, so there would be effects on traditional gathering.

Half of the thinning (4 stands, 118 acres) is designed to reduce the danger of crown fires near the Flora Lake community, by row/strip thinning leaving about 80-100 feet of residual basal area. The local residents are concerned because this thinning is directly adjacent to their homes, so could affect visual conditions and traditional gathering opportunities. Three other stands are red pine thinnings (37 acres) designed to increase growth on residual trees. There were no specific concerns mentioned about this red pine thinning. One final stand is designed to regenerate the older aspen in the stand while keeping the black ash overstory (11 acres). Different local residents object to the thinning in ash for the same visual and gathering reasons. In all of this thinning there would be changes/disturbance to the overstory and understory, so some gathered species would be increased or decreased and the area would "look" somewhat different.

The natural regeneration and conversion of 8 wildlife openings (11 acres) would allow nature to take its course in openings where we no longer desire to spend money and effort reducing the shrub/tree cover, since they are not in locations that are in social high demand. This would increase the amount of young northern hardwoods, aspen, and ash in the area. There was no expression of concern over this project.

The planting of 4 wildlife openings (5 acres) with fruiting shrubs, jack pine, red pine, and white pine would reduce the amount of permanent openings being maintained and increase desirable tree and fruiting shrub cover. There was no expression of concern over this project.

Six stand (11 acres) of wildlife openings are being maintained in a grass/forb cover. This is retaining openings that are easily accessible for wildlife viewing and hunting. There was no expression of concern over this project.

The enlarged parking lots for Lake Andrusia and Big Lake would make it safer to use these boat landings by allowing parking in lots rather than on roads or crowded into tiny parking lots. There was no expression of

concern over these projects, although the local Indian community would have preferred a new landing on Kitchi Lake rather than these. There is more discussion of recreational uses in Section 3.7 (Recreation).

The two temporary roads are needed to access two of the stands mentioned previously. This is not much more disturbance than the harvesting, with effects on traditional gathering discussed in Section 3.3.3.3.

3.3.3.1.2.3 -- Alternative C - Treatments within ¼ mile of tribal lands

There are 33 treated stands (398 acres) plus two new parking lots and 2 temporary roads within ¼ mile of tribal lands. Of these, 3 are clearcuts (26 acres), 4 are group selection cuts (179 acres), 8 are thinnings (167 acres), 6 are maintained wildlife openings (11 acres), 4 are planted wildlife openings (5 acres), and 8 are natural regeneration of wildlife openings to trees (11 acres). These treatments are all in line with Forest Plan direction.

The clearcuts are the same as in Alternative B.

The group selection cuts are the same as in Alternative B except there would be no thinning between the groups; so the conversion would not be as complete as in Alternative B. Effects would be the same except the lack of thinning between groups would leave most of the stand area unchanged for traditional gathering.

The thinning is the same as in Alternative B except the 118 acres near the Flora Lake community would be done by basal area thinning leaving a higher residual basal area than in Alternative B. This should ameliorate some of the visual concerns by the local residents since there would not be long, wide, straight harvested rows/strips.

The natural regeneration and conversion of 8 wildlife openings (11 acres) is the same as in Alternative B.

The planting of 4 wildlife openings (5 acres) is the same as in Alternative B.

Six stand (11 acres) of wildlife openings are being maintained in a grass/forb cover the same as in Alternative B.

The enlarged parking lots for Lake Andrusia and Big Lake are the same as in Alternative B.

The two temporary roads are the same as in Alternative B.

3.3.3.1.2.4 -- Alternative D - Treatments within ¼ mile of tribal lands

There are 22 treated stands (113 acres) plus two new parking lots and 1 temporary road within ¼ mile of tribal lands. Of these, 1 is a group selection cut (49 acres), 3 are thinnings (37 acres), 6 are maintained wildlife openings (11 acres), 4 are planted wildlife openings (5 acres), and 8 are natural regeneration of wildlife openings to trees (11 acres). These treatments are all in line with Forest Plan direction.

The clearcuts in Alternatives B and C are deferred due to tribal concerns over traditional gathering, harvesting near their community, and increased fire danger.

The only group selection cut retained from Alternatives B and C is Stand 19 which is not directly adjacent to the Mississippi River. This leaves 49 acres of harvesting and 10 acres of white pine in the groups, with no thinning between the groups. This decreases the amount of white pine along the river in the future. It also leaves much more area undisturbed for traditional gathering and uses. There would be no visual disruption along the river. The northern hardwoods would be left undisturbed.

Only 3 of the 8 thinning stands are being retained in Alternative D (37 acres). The rest are being deferred due to tribal concerns for traditional gathering, visual concerns, and cutting near their homes. This is 37 acres of thinning in red pine with associated effects to traditional resources as shown in Section 3.3.3.3.

The natural regeneration and conversion of 8 wildlife openings (11 acres) is the same as in Alternatives B and C.

The planting of 4 wildlife openings (5 acres) is the same as in Alternatives B and C.

Six stand (11 acres) of wildlife openings are being maintained in a grass/forb cover the same as in Alternatives B and C.

The enlarged parking lot for Big Lake is the same as in Alternatives B and C. The lot at Lake Andrusia is deferred to limit development near Lake Andrusia which is one thing mentioned in a LIC meeting. There is more discussion of recreational uses in Section 3.7 (Recreation).

With the dropping of one harvest unit, one of the temporary roads is not needed. So there is only one temporary road (0.1 miles) with the same effects as in Alternatives B and C.

3.3.3.2 -- Riparian - Water Quality Problems from Harvesting (and other treatments)

3.3.3.2.1 -- Existing Condition - Water Quality Problems from Harvesting (and other treatments)

Water quality effects are described in great detail in Section 3.4 (Water Quality). Specific effects related to traditional uses and gathering are expanded on here. Comments from LLBO members have focused on two areas related to riparian areas: visual conditions and wild rice (Comment 37.2 and 37.11), with some generic comments about wetlands. Visual conditions are analyzed in Section 3.12 with only brief mentions here.

Concerns for wild rice are related to sedimentation from disturbed soil in harvested stands, so we will look at the effects of any harvesting done within 200 feet of the edge of open water.

Non-Key Issues:

Harvesting, roads, and other vegetation management activities, especially in riparian zones or near wetlands, may cause water quality/visual problems. (PR# 340 Comments 37.2 and 37.11 and PR# 343 Comment 38.4.)

(Forest Service Comments on this issue: BMPs protect water and riparian areas. The Forest Plan on pages 2-11 to 2-15 pertains to water quality and protection. Results from site monitoring of wetlands and riparian areas the last several years indicate FP S&G, BMPs are being followed (Monitoring and Evaluation reports from FY2005 through 2008; also monitoring conducted by DNR). The EA analysis will look at these potential effects.)

Indicators:

Acres, number of stands, and types of harvesting within 200 feet of riparian areas or wetlands.
Effects from this harvesting on water quality (Visual is in Section 3.12).

Harvesting near the Mississippi River may negatively affect wild rice. (PR# 340 Comment 37.11 and PR# 375 Comment 40.8.)

(Forest Service Comments on this issue: BMPs protect water and riparian areas and thus wild rice also. The Forest Plan on pages 2-11 to 2-15 talks about water quality and protection. The EA analysis will look at these potential effects.)

Indicators:

Acres of harvesting along the Mississippi River.
Effects on wild rice from this harvesting.

3.3.3.2.2 -- Direct/Indirect Effects - Water Quality Problems from Harvesting (and other treatments)

In summary, there would be the following effects to water quality:

Table 3.3.3.2.2.aa -- Indicators and Effects Related to Gathering (water quality)

Indicator	Alternative A	Alternative B	Alternative C	Alternative D
Harvesting, roads, and other vegetation management activities, especially in riparian zones or near wetlands, may cause water quality/visual problems (See 3.12 for Visual):				
Acres, number of stands, and types of harvesting within 200 feet of riparian areas or wetlands.	No harvesting within 200 feet of riparian areas or wetlands.	In the 200 foot riparian zone are: Clearcuts: 26.3 acres (11 stands) Uneven-aged: 40.1 acres (10 stands) Thinning: 11.3 acres (6 stands)	In the 200 foot riparian zone are: Clearcuts: 13.4 acres (6 stands) Uneven-aged: 41.5 acres (11 stands) Thinning: 18.3 acres (8 stands)	In the 200 foot riparian zone are: Clearcuts: 2.6 acres (4 stands) Uneven-aged: 1.7 acres (2 stands) Thinning: 14.4 acres (6 stands)
Effects from this harvesting.	None.	Due to BMPs, there should be no water quality effects.	Due to BMPs, there should be no water quality effects.	Due to BMPs, there should be no water quality effects.
Harvesting near the Mississippi River may negatively affect wild rice.				
Acres of harvesting along the Mississippi River.	No harvesting.	Within 200 feet of the Mississippi River are: Group selection with thinning: 30.6 acres (7 stands). Thinning: 1.9 acres (1 stand).	Within 200 feet of the Mississippi River are: Group selection with just groups: 30.6 acres (7 stands). Thinning: 1.9 acres (1 stands).	Within 200 feet of the Mississippi River is no harvesting.
Effects on wild rice from this harvesting.	None.	Due to BMPs, there should be no effects on wild rice.	Due to BMPs, there should be no effects on wild rice.	Due to BMPs and no nearby harvesting, there should be no effects on wild rice.

Tables in the Specialist Report EA (PR# 480) show effects on up to 147.6 acres of potentially treated stands within the 200 foot Forest Plan Riparian Zones (near bank and remainder).

3.3.3.2.2.a -- Treatments that overlap wetland polygons on the NWI GIS Feature Class ***

Alternative	Pieces overlapped	Acres overlapped
Alt. A	0	0
Alt. B	292 pieces	130 acres
Alt. C	264	127
Alt. D	168	87

* Project Record # 405 and 406 are maps that identify each of these locations for use as reference to the ArcGIS analysis.

** National Wetland Inventory

As is obvious from the maps in PR# 405 and 406, the affected NWI areas are very small. If this is extended out to 200 feet from the edge of wetlands on the NWI GIS Feature Class, the acreage and number of pieces would be much greater, but in about the same proportion as in the above table. Due to the number of individual pieces, which involve almost every stand with a prescription, no further detailed analysis will be done on differences between alternatives due to treatments in or near wetlands. It should be noted that the Forest Plan contains guidance for treatments around wetlands. This guidance will become part of the stand prescriptions and will be inplemented on the ground. Thus effects to wetlands would be minimal and effects would be within the limits analyzed in the EIS for the Forest Plan (PR# 72a)

3.3.3.3 -- Traditional Resources - Harvesting (and other treatments) Precludes or Changes Use

3.3.3.3.1 -- Existing Condition - Traditional Cultural Resources

Any vegetation treatment can have negative or positive effects on the various resources that are gathered or used.

Key Issue 2. Traditional Resources and Uses:

The Leech Lake Band of Ojibwe has stated that managing according to the proposed alternatives results in the Forest not meeting Trust Responsibilities and is showing a lack of respect for LLBO traditional resources and gathering rights.

Indicators

Acreage and number of stands in which historic, traditional use is potentially precluded by harvesting.

Acreage and number of stands in which historic, traditional use is potentially undesirably changed by harvesting.

Effects of treatments or lack of treatments on traditionally gathered resources.

Number of stands deferred, modified, or retained that are mentioned by the LLBO as traditional gathering sites.

Acres of clearcutting changed to other treatments that maintain structure, age, and species composition or that maintain "ecological function" (Comments 37.4 and 40.5).

Acres of harvest treatments changed to less intensive methods between alternatives.

Acres of harvest treatments deferred between alternatives.

Acres of mature red pine harvest and type of harvest (Comment 19.3).

Acres of harvesting in sugar maple stands (Comment 19.6).

Acres of row thinning that decrease diversity (Comment 19.2).

Acres of mature jack pine clearcut.

Acres treated for increased blueberry production (Comments 5.1, 14.4, and 25.1).

Harvesting near the Mississippi River may negatively affect wild rice.

(This was covered in Section 3.3.3.2 on water quality and Table 3.3.3.2.2.aa, but there will be general comments on wild rice here also.)

There are two special resource areas and four tables of information that will comprise the analysis for the tradition resources use and gathering section in the Specialist Report EA (PR# 480). These are all summarized in one table, with only the items or resource areas that contain effects listed here to shorten the analysis and make it easier to understand. The total analysis in the Specialist Report EA (PR# 480) includes the following breakdown:

Jack pine, red pine, and sugar maple.
Riparian treatments.
Table "a" - A listing of the indicators.
Table "b" - 39 categories of traditional resources
Table "c" - THPO-1 from the Forest Plan - Traditional Resources Inventory
Table "d" - THPO-2 from the Forest Plan - Species of Concern

Prior to scoping and meetings with the LLBO LICs or DRM, known tribal concerns were taken into account by not doing much treatment in sugar maple and northern hardwood stand and by planning ecosystem burning in some large old red pine stands that would benefit the understory plants, e.g. blueberries.

In Table 3.3.3.3.2.1.aa comparisons are often made to Alternative B rather than to the proposed action (Alternative C). This was usually done to show the effects of going from the most impactive alternative to the least impactive one, rather than to start with the proposed action which is of medium impact in most cases.

3.3.3.3.2 -- Direct/Indirect Effects - Traditional Cultural Resources
3.3.3.3.2.1 – GENERAL DISCUSSION AND SUMMARIES (lumped into Table 3.3.3.3.2.a in the Public EA)

Following is one table that contain all of the resources, issues, concerns, and special species that are in the Specialist Report EA (PR# 480) that show effects from treatments or lack of treatments. Effects due to this alternative are discussed for each one, either specifically or in general depending on the type of information that is available and the type of effects.

Table 3.3.3.3.2.1.aa -- Traditional Cultural Resources (selected ones with effects from treatments)

Special Resource	Existing Condition or Current Information	Alternative A	Alternative B	Alternative C	Alternative D
Jack Pine (JP)	LLBO desires retention of older JP	No harvesting , so they would remain as they are with only natural changes.	81 acres of clearcutting in mature jack pine would reduce habitats/resources/uses that rely on the shaded understories of jack pine the most of any of the action alternatives. 139 acres of jack pine thinning for fire protection would impact visual conditions and could change traditional gathering opportunities by allowing more sunlight to the ground and physically disturbing the plants and the soil.	No clearcutting in mature jack pine (or in any jack pine), deferring it due to tribal concerns, but since it is mature, the stands would continue to experience mortality and natural changes. Same 139 acres of jack pine thinning for fire protection but higher stocking left for less impacts visually and to resources.	No clearcutting or thinning in mature jack pine (or in any jack pine), deferring it in due to tribal concerns, although there is expected to be much mortality in the future due to the short lifespan of jack pine.
Red Pine (RP) (Comment 19.3)	LLBO desires lot of old red pine - beyond FP rotation age	No harvesting , so they would remain as they are with only slow natural changes.	351 acres of clearcutting in mature red pine, with 337 of these acres added because this is the maximum volume alternative. This changed 272 acres of Alternative C's thinning to clearcutting and 65 acres of its group selection cutting to clearcutting. Plus kept 3 acres of 2-aged shelterwood cutting and added 45 acres of thinning in mature red	14 acres of red pine clearcutting and 65 acres of group selection harvesting in C that were clearcuts in B (thus retaining 337 more acres of the old red pine than in Alt. B). There is also 3 acres of 2-aged shelterwood and 304 acres of mature red pine being	4 acres of mature red pine clearcutting, 3 acres of 2-aged shelterwood cutting, 65 acres of group selection cuts, and 284 acres of thinning, with 10 more acres of the clearcutting and 20 more acres of the thinning from Alternative C being deferred to retain old red pine due to

Special Resource	Existing Condition or Current Information	Alternative A	Alternative B	Alternative C	Alternative D
			pine. This reduces an old habitat type that is desired by the LLBO by 354 acres and disturbs the habitat on the other 45 acres.	thinned. This reduces regeneration harvest in an old habitat type that is desired by the LLBO to 79 acres and disturbs the habitat on the other 304 acres.	tribal concerns. This reduces regeneration harvest in an old habitat type that is desired by the LLBO to 69 acres and disturbs the habitat on the other 284 acres.
Sugar Maple (SM) (Comment 19.6)	LLBO sees multiple values in untreated SM stands. Some sugarbush tapping.	No harvesting , so they would remain as they are with only slow natural changes. Slow growth means slow recruitment of new large sugarbush trees.	291 acres of various types of uneven-aged management in 9 sugar maple stands (58 individual tree selection, 132 group selection, and 101 2-aged shelterwood). 10 acres riparian planting and 2 boat landings in sugar maple stands. Possible changes in the character of the sugar maple stands and of the understory (brushiness, loss of some species, faster growth of residual trees, more sunlight to ground, physical disturbances)	256 acres of various types of uneven-aged management in 8 sugar maple stands, with 35 acres in Alternative B that would be cut for maximum volume being deferred due to tribal concerns in a specific stand (23 individual tree selection, 132 group selection, and 101 2-aged shelterwood). 10 acres riparian planting and 2 boat landings in sugar maple stands.	68 acres of various types of uneven-aged management in 6 sugar maple stands, with 188 more acres from Alt. C being deferred due to tribal concerns in specific stands. LLBO has not mentioned specific concerns with these stands. The deferred stands would grow naturally, becoming denser but with the relatively open/humid understories retained (23 individual tree selection and 45 2-aged shelterwood). 10 acres riparian planting and 2 boat landings in sugar maple stands.
Riparian	LLBO sees many values to riparian areas	No harvesting or other treatments within the 200 foot riparian zone. Traditional gathering/uses would continue as they have in the last 10 years, since the	51 instances of management in the 200 foot RMZs. Harvesting is 26.3 acres of clearcutting (11 stands), 40.1 acres uneven-aged cuts (10 stands), and 11.3 acres thinning (6 stands). Also 30.6 acres of group selection harvesting (7 stands) and 1.9 acres	49 instances of management in the 200 foot RMZs. Although Alt. C is the proposed action it is easier to look at effects as changes from the most to the least, so the discussion starts in Alternative B. Changes	36 instances of management in the 200 foot RMZs. Changes from Alt. B are 6 deferred clearcuts (drop 23.7 acres) including the 3 patch clearcuts in Alt. C, 1 red pine clearcuts becoming thinnings, 2 deferred

Special Resource	Existing Condition or Current Information	Alternative A	Alternative B	Alternative C	Alternative D
		vegetation would remain essentially unchanged.	of thinning by the Mississippi River (1 stand). In all probability no harvesting would be done in the 100 foot "near bank" zone and management in the 100-200 foot "remainder" zone would be modified to be less intensive (higher residual BA, longer rotation species). Long rotation conifers and hardwoods in 19 of the 51 stands. Short rotation management in 8 of the 51 stands. 7 stands are planted with white pine without harvesting. 5 wildlife openings planted with red pine, white pine, and tamarack. Six other wildlife openings in these zones are being maintained or regenerated naturally. Star Island Toilet, Andrusia/Big/Winnie parking lots, canoe access road, and Bass Lake Road are expected to have no effect on traditional uses or gathering related to riparian areas. Impacts are physical disturbance to traditional resources, more understory sunlight, some exposed	from Alt. B are 2 deferred clearcuts (drop 12.9 acres) and 3 red pine clearcuts becoming thinnings (7 acres). One aspen regeneration is changed to northern hardwood conversion. Three aspen clearcuts become aspen patch clearcuts. Long rotation conifers and hardwoods in 19 of the 51 stands. Short rotation management in 5 stands. Same white pine, wildlife opening treatments, toilet, parking lots , and road as in Alternative B. All of the riparian impact discussion under Alternative B applies to Alternative C	thinnings (drop 3.9 acres), and 8 deferred uneven-aged stands (drop 38.4 acres). This includes no harvesting by the Mississippi River. Long rotation conifers and hardwoods in 9 (not 19) of the original 51 stands. Short rotation management in 3 stands. Same white pine, wildlife opening treatments, toilet, parking lots , and road as in Alternative B. Thus Alternative D would have much less impact on traditional gathering/uses

Special Resource	Existing Condition or Current Information	Alternative A	Alternative B	Alternative C	Alternative D
			soil, increased long-lived conifers. While expected to be minor, Alternative B (as compared to Alternatives C, D, and A) has the most effects related to riparian areas within this zone.	also except it is on fewer acres, so fewer impacts.	related to riparian areas than Alternative C, leaving the stands to grow naturally and to continue to have the existing "character" and traditional resources.
Indicators for Traditional Resources and Uses: Trust Responsibilities	**Existing Cond**	**Alternative A**	**Alternative B**	**Alternative C**	**Alternative D**
Acreage and number of stands in which historic, traditional use is potentially precluded by harvesting.		0	1,261 acres of clearcutting in 70 stands and 68 acres of shelterwood in 3 stands. Thus the combination of effects from ground disturbance from logging and site preparation, plus loss of dense overstory canopy of large trees.	488 acres of clearcutting in 39 stands and 49 acres of shelterwood in 2 stands. Same discussion as Alternative B.	225 acres of clearcutting in 18 stands and 25 acres of shelterwood in 1 stand. Same discussion as Alternative B.
Acreage and number of stands in which historic, traditional use is potentially undesirably changed by harvesting.	Assumes non-even-aged regeneration harvest treatments are less intensive, so result in less ground disturbance and more residual overstory canopy.	0	1,698 acres of non-clearcut harvest types in 90 stands.	2,044 acres of non-clearcut harvest types in 104 stands.	1,296 acres of non-clearcut harvest types in 77 stands.
Effects of treatments or lack of treatments on traditionally gathered resources.	Effects of treatments are variable depending on the specific resource. Refer to the rest of	No disturbance of traditionally used sites or resources.	Plant 46 acres of white pine in riparian areas and 8 in wildlife opening. Plant jack pine in 12 acres of	Plant 46 acres of white pine in riparian areas and 8 in wildlife opening. Plant jack pine in 12 acres	Plant 15 acres of white pine in riparian areas and 8 in wildlife opening. Plant jack pine in 12 acres of

Special Resource	Existing Condition or Current Information	Alternative A	Alternative B	Alternative C	Alternative D
POSITIVE:	this table for more details on anticipated species response to treatments.	Fruiting shrubs in stands not released continue to grow.	wildlife openings. Plant fruiting shrubs in 5 acres. Release leaves more diversity and large fruiting shrubs than in the past. Understory burn for fuel reduction on 43 acres helps berries and understory conditions. So potentially more gathering opportunities.	of wildlife openings. Plant fruiting shrubs in 5 acres. Release leaves more diversity and large fruiting shrubs than in the past. Ecosystem burning on 278 acres for understory conditions and berry production and 169 acres of understory burning for fuels reduction. So potentially more gathering opportunities.	wildlife openings. Plant fruiting shrubs in 7 acres. Release leaves more diversity and large fruiting shrubs than in the past. Ecosystem burning on 278 acres for understory conditions and berry production and 169 acres of understory burning for fuels reduction. So potentially more gathering opportunities.
NEGATIVE:		No harvesting for future younger stands for game habitat. No new future white or jack pine stands. No new fruiting shrubs. No ecosystem burning to help berry production.	Clearcut/shelterwood 1,261 acres. Other harvesting on 1,698 acres. Mechanical scarification on 572 acres. No ecosystem burning to help berry production. Clearcuts and other harvests are temporary loss of old trees but other benefits from young trees. Scarification is temporary loss of gathering in parts of stands. Release removes some species and sets ages back on some fruiting shrubs, potentially reducing	Clearcut/shelterwood 537 acres. Other harvesting on 2,044 acres. Mechanical scarification on 145 acres. Clearcuts and other harvests are temporary loss of old trees but other benefits from young trees. Scarification is temporary loss of gathering in parts of stands. Release removes some species and sets ages back on some fruiting	Clearcut/shelterwood 250 acres. Other harvesting on 1,296 acres. Mechanical scarification on 96 acres. Clearcuts and other harvests are temporary loss of old trees but other benefits from young trees. Scarification is temporary loss of gathering in parts of stands. Release removes some species and sets ages back on some fruiting

Special Resource	Existing Condition or Current Information	Alternative A	Alternative B	Alternative C	Alternative D
			gathering opportunities.	shrubs, potentially reducing gathering opportunities.	shrubs, potentially reducing gathering opportunities.
Number of stands deferred, modified, or retained that are **mentioned by the LLBO** as traditional gathering sites.		All stands are deferred from treatments.	Of 30 stands in Comment 37.2, two are deferred. One stand mentioned by LLBO earlier is modified from clearcut to shelterwood.	Of 30 stands in Comment 37.2, five are deferred and 8 are modified to less intense treatments. One stand mentioned by LLBO earlier is modified from clearcut to shelterwood.	Of 30 stands in Comment 37.2, 24 are deferred and 3 are modified to less intense treatments. One stand mentioned by LLBO earlier is modified from clearcut to shelterwood.
Acres of **clearcutting** changed to other treatments that maintain structure, age, and species composition or that maintain "ecological function" (Comments 37.4 and 40.5).		All 1,193 acres of clearcutting in any alternative in the KRM EA are deferred.	At various times in the NEPA process due to collaboration with LLBO, 25 acres of clearcutting were deferred and 24 acres modified to less intense harvest. However 337 acres of red pine thinning in Alternative C became clearcutting in Alt. B.	At various times in the NEPA process due to collaboration with LLBO, 25 acres of clearcutting were deferred and 24 acres modified to less intense harvest. Effect compared to Alternative B are 321 acres less clearcutting and 459 acres of less intensive harvests.	At various times in the NEPA process due to collaboration with LLBO, 25 acres of clearcutting were deferred and 24 acres modified to less intense harvest. From Alternative C another 264 acres of clearcutting was deferred.
Acres of harvest treatments **changed to less intensive** methods between alternatives.		No harvest was changed to less intensive methods.	Since Alternative B was the most impactive alternative, it was used as the baseline for comparison, going toward less impacts.	459 acres in 36 stands are less intensive management.	No more acres were modified to be less intensive - same as Alt. C
Acres of harvest treatments **deferred**		All 2,959 acres of proposed	Since Alternative B was the most impactive alternative, it was	376 acres in 19 stands are deferred from treatment	1,035 acres in 30 stands are deferred.

Special Resource	Existing Condition or Current Information	Alternative A	Alternative B	Alternative C	Alternative D
between alternatives.		harvesting is deferred.	used as the baseline for comparison, going toward less impacts.	as compared to the most intensive treatment proposed in Alternative B.	
Acres of **mature red pine** harvest and type of harvest (Comment 19.3).	This issue is discussed earlier in this table as one of the "special resources".				
Acres of harvesting in **sugar maple** stands (Comment 19.6).	This issue is discussed earlier in this table as one of the "special resources".				
Acres of **row thinning** that decrease diversity (Comment 19.2).		No row/strips thinning.	632 acres of potential row thinning in red pine. 139 acres of jack pine thinning are in rows/strips.	632 acres of potential row thinning in pine. Jack pine thinning is not in rows/strips.	516 acres of potential row thinning in pine. No jack pine thinning.
Acres of **mature jack pine** clearcut.	This issue is discussed earlier in this table as one of the "special resources".				
Acres treated for increased **blueberry** production (Comments 5.1, 14.4, and 25.1).		No treatments for blueberries.	Treatments that help blueberries include: Ecosystem burning: 0 Understory burning: 43 Jack pine harvest and regeneration: 81 Harvest and conversion to jack pine: 79 Jack pine thinning: 139	Treatments that help blueberries include: Ecosystem burning: 278 Understory burning: 169 Jack pine harvest and regeneration: 0 Harvest and conversion to jack pine: 14 Jack pine thinning: 139	Treatments that help blueberries include: Ecosystem burning: 278 Understory burning: 169 Jack pine harvest and regeneration: 0 Harvest and conversion to jack pine: 14 Jack pine thinning: 0

Traditional Resource (if not included in other parts of this table)	Existing Cond.	In Alt. A	In Alt. B	In Alt. C	In Alt. D
Berry/fruit picking (General)	Many types of berries are gathered. They occur in a wide variety of landscapes from dry to wet.	0 stands affected in GIS layer	35 stands affected in GIS layer	32 stands affected in GIS layer	7 stands affected in GIS layer
Animal Resources (Hunting)	Hunting includes many species that live in many habitats ranging from aspen clearcuts to old conifers.	0 stands affected in GIS layer	55 (+ 0 burn) stands affected in GIS layer	51 (+ 3 burn) stands affected in GIS layer	33 (+ 3 burn) stands affected in GIS layer
Animal Resources (Trapping)	Trapping is often associated with water which is not in harvested stands. Upland trapping could be associated with harvested units depending on the trapped species.	0 stands affected in GIS layer	near 12 stands affected in GIS layer	near 11 stands affected in GIS layer	6 stands affected in GIS layer
Spiritual Resources (places)	Varies from specific sites to "movable" sites.	0 stands affected in GIS layer	11 (+ 0 burn) stands affected in GIS layer but not necessarily mentioned by LLBO members as stands affected	11 (+ 10 burn) stands affected in GIS layer but not necessarily mentioned by LLBO members as stands affected	6 (+ 10 burn) stands affected in GIS layer but not necessarily mentioned by LLBO members as stands affected
General Traditional Resources (Table 3.3.3.3.2.1.c in Specialist Report)		**Alternative A Effects**	**Alternative B Effects**	**Alternative C Effects**	**Alternative D Effects**
Juneberries Serviceberries *Amelanchier spp.*	It occurs in open woods, along bogs and wet sites.	Alternative A, with no treatments, would not have effects on this	Harvest could temporarily decrease the species by top-killing and by physical crushing. Some may be planted in 5 acres of wildlife	Alternative C has less harvesting than Alternative B so there would be fewer effects.	Alternative D has less harvesting than Alternatives B and C, even though there are 2 more acres of planting

Special Resource	Existing Condition or Current Information	Alternative A	Alternative B	Alternative C	Alternative D
		species, although it also does not release the species for improved growth.	openings.		fruiting shrubs, so there would be fewer effects.
ash - green/black	Black ash occupies poorly drained swamps, bogs, and lowlands. A vigorous sprouter. Risk of loss occurs from the emerald ash borer (EAB). Black ash is valuable for baskets and for the ecosystem.	Alternative A, with no treatments, would not have effects on this species.	Alternative B has thinning to regenerate pockets of aspen in one stand (11 acres) and clearcutting to convert to aspen in 2 stands (29 acres); in stands that really are aspen stands now, just mis-typed. This would reduce the number of black ash stands on paper but not in reality. The Star Island Toilet is being placed in a black ash stand, which would have no effect on the stand. No effects on future EAB loss.	Alternative C has less harvesting (drops 1 stand, 26 acres) than Alternative B so there would be fewer effects. No effects on future EAB loss.	Alternative D has less harvesting (drops 2 stands, 37 acres) than Alternative B and less than Alternative C (1 stand, 11 acres) so there would be fewer effects. No effects on future EAB loss.
balsam fir	Balsam fir exists as an understory or sub-dominant canopy tree species. It is highly shade tolerant. Maps of potential gathering sites are given to LLBO.	Alternative A, with no treatments, would not have effects on this species. Maps of potential gathering sites are given to LLBO.	There would be much harvesting and scarification under Alternative B so it is highly probable that many of the balsam fir trees in those stands would be harvested or crushed. We attempt to retain fir under 4 inches DBH in selected stands through sale administration. Trees grow out of the desired condition within 10 to 20 years even if they are retained. Maps of potential gathering sites are given to LLBO.	Alternative C has less harvesting than Alternative B so there would be fewer effects. Maps of potential gathering sites are given to LLBO.	Alternative D has less harvesting than Alternatives B and C so there would be fewer effects. Maps of potential gathering sites are given to LLBO.
basswood	Basswood is usually managed as part of uneven-aged northern	Alternative A, with no treatments, would not have	Alternative B has harvesting in about 291 acres of hardwood stands where basswood is expected to be a	Alternative C has harvesting in about 256 acres. Alternative C has less	Alternative D has harvesting in about 68 acres. Alternative D has much less

Special Resource	Existing Condition or Current Information	Alternative A	Alternative B	Alternative C	Alternative D
	hardwood stands. Little basswood is known to exist in the KRM EA area.	effects on this species.	major or minor component. Not much basswood is anticipated to be harvested but there are cases where it needs to be thinned out or the clumps thinned. It readily sprouts, so a younger cohort is established.	harvesting than Alternative B so there would be fewer effects.	harvesting than Alternatives B and C so there would be fewer effects.
princess pine *Chimaphila umbellata*	Princess pine (pipsissewa) is a common understory species in coniferous and mixed forests on dry, well-drained, or sandy soils (red pine &/or white pine stands). It is moderately shade tolerant. Low severity fires that do not consume the organic mantle may only top kill it.	Princess pine under Alternative A would continue to grow as it is since the plants and the upper soil horizons are not disturbed by harvesting equipment, scarification, or other treatments.	Princess pine under Alternative B would be affected in a few stands on well-drained or sandy soils that are harvested and/or scarified. Harvesting crushes plants and the scarification removes them, but not all parts of the stands are treated intensively and the plants would grow-in and fill the disturbed areas again in the future. The harvesting benefits the plants by increasing light levels in the intermediate harvesting. During LIC meetings, at least one stand being proposed for harvest under Alternative B was mentioned as being a site where this plant is gathered. This would negatively affect the gathering opportunity.	Alternative C has less harvesting than Alternative B so there would be fewer effects, but this one stand is still proposed for harvesting.	The specific one stand mentioned in Alternatives B and C is deferred in Alternative D, plus Alternative D has less harvesting, so Alternative D has fewer effects than Alternatives B and C.
Red osier or dogwood *Cornus stolonifera*	It most frequently occurs as a riparian species in moist forest habitats, swamps, and low meadows. It needs moderate to full sunlight.	Alternative A, with no treatments, would not have effects on this species, either negative or beneficial.	Little or no harvesting in riparian zones, however about 51 acres of riparian planting of conifers. The site preparation and release may result in some cut dogwood, but it would resprout. Increased light is beneficial.	The same effects as Alternative B.	Only 15 acres of riparian planting, so there would be fewer effects than Alternative B or C.
Hazelnut *Corylus cornuta*	Beaked hazelnut is common in the area. Its	Alternative A, with no treatments,	Harvesting crushes hazel but it resprouts resulting in dense thickets.	Alternative C has less harvesting and about 145	Alternative D has less harvesting and about 96

Special Resource	Existing Condition or Current Information	Alternative A	Alternative B	Alternative C	Alternative D
	rhizomatous habit generally produces thickets that form a continuous understory in the absence of disturbance and sprouts when disturbed. It is moderately shade tolerant.	would not have direct effects on this species.	Harvest plus scarification (up to about 572 acres) may reduce hazel for a year or two, but would regrow from roots that are left. This harvesting is on about 2% of NFS lands so really has only a minor effect.	acres of scarification so fewer effects than Alternative B.	acres of scarification so fewer effects than Alternatives B or C.
deer	Deer are commonly associated with young clearcuts and adjacent habitats.	By doing no regeneration harvesting, Alternative A would not be maintaining the current desirable deer habitat (clearcuts or very young tree regeneration).	Alternative B would make more desirable deer habitat by clearcutting 1,193 acres and shelterwood cutting 68 acres. Other harvest methods are useful but not to the extent of the open conditions in a clearcut or shelterwood cut.	Alternative C has less than half the clearcutting (488 acres) and shelterwood harvesting (49 acres) than Alternative B so there would be fewer beneficial effects.	Alternative D has less than half the clearcutting (225 acres) and shelterwood harvesting (25 acres) than Alternative C, which was half the intensity of Alternative B, so there would be many fewer beneficial effects.
Honeysuckle *Diervilla lonicera Lonicera spp.*	About 6 species of honeysuckle occur on lowland or wetland sites or in moist woods.	Alternative A, with no treatments, would not have effects on this species, although it also does not release the species for improved growth.	Alternative B has timber harvesting in numerous stands where honeysuckle could be found (almost all of the stands have this potential). It would not increase or decrease the species much since some stands would be winter-logged and where it is crushed it would sprout.	Alternative C has less harvesting than Alternative B so there would be fewer effects.	Alternative D has less harvesting than Alternatives B and C so there would be fewer effects.
eagle feathers	Bald eagles are discussed extensively in the EA, especially Section 3.2.4.2.2. Usually near lakes or nests.	Alternative A, with no treatments, would not have effects on this species.	Eagle feather gathering is a known activity in this area. There are seasonal restrictions on activities or restrictions on treatments within 200 meters (660 feet) of eagle nests or along lake shores where gathering	The same effects as Alternative B.	Alternative D drops Andrusia Parking Lot so fewer treatments near water than Alternatives B and C so there would be fewer effects.

Special Resource	Existing Condition or Current Information	Alternative A	Alternative B	Alternative C	Alternative D
			feathers was mentioned as an activity, so there should be no effect on this activity other than in one stand being burned for ecosystem management where feathers on the ground could be burned along with the vegetation..		
fuel wood	Primarily comes from harvesting activities.	Fuelwood gathering under Alternative A would continue to be available in previously harvested stands for a few years, but no new harvesting would be done to make new fuelwood.	Fuelwood gathering under Alternative B would continue to be available in previously harvested stands, plus there would be 2,959 acres of new harvesting where at least some fuelwood would be made, especially at log landings.	Alternative C has less harvesting (2,581 acres) than Alternative B so there would be fewer beneficial effects.	Alternative D has less harvesting (1,546 acres) than Alternatives B and C so there would be fewer beneficial effects.
Wintergreen *Gaultheria procumbens*	Wintergreen occurs mainly in red pine and jack pine forests. It is shade tolerant. Fruit production is stimulated by thinning timber stands and removing overtopping vegetation.	Alternative A, with no treatments, would not have beneficial effects on this species.	Alternative B has about 1,205 acres of harvesting and an additional 30 acres of understory burning in red and jack pine stands where this species could be expected. All treatments mechanically injure the plants. About 771 acres of intermediate harvesting and the burning increase light to the ground vegetation, while 434 acres of clearcutting and shelterwood cutting may be too intense for the species to thrive.	Alternative C has less harvesting (about 1,111 acres), but more burning (272 acres). The increased burning and more intermediate cutting (1,094 acres) increase light while less clearcutting and shelterwood cutting (17 acres) could hinder the plant. So Alternative C would have more beneficial and less detrimental effects on the species.	Alternative D has even less harvesting (about 846 acres), but the same burning as Alt. C (272 acres). The increased burning and more intermediate cutting (839 acres) than Alt. B increase light while less clearcutting and shelterwood cutting (7 acres) could hinder the plant. So Alternative D would be somewhere between Alt. B and C in beneficial effects and have less detrimental effects on the species.
mammals - small	Small mammal	Alternative A, with	Alternative B has a large amount of	Alternative C has less	Alternative D has less

Special Resource	Existing Condition or Current Information	Alternative A	Alternative B	Alternative C	Alternative D
	populations benefit from regrowth in harvest units, especially intermediate harvest, and from reserved logs and snags, although some lose forested habitat.	no treatments, would not have effects on this species; although it also does not make slash or new undergrowth that could be habitat for the species.	harvesting, which would be beneficial to many species, with the increased habitat in slash, reserved logs and snags, and dense new undergrowth	harvesting than Alternative B so there would be fewer beneficial or detrimental effects.	harvesting than Alternative C so there would be fewer beneficial or detrimental effects.
"medicinal" plants	This category of plants covers a wide range of plants and forest habitats many of which are discussed elsewhere.	Medicinal plant gathering would continue to be available under Alternative A unless the species rely on open conditions for maintenance.	Medicinal plant gathering would continue to be available under Alternative B as all habitats in the KRM EA area are maintained. No habitats are being lost under Alternative B. There may be a displacement of gathering from specific locations that are logged, until plants grow back after disturbances.	Thus the same types of effects as Alternative B but on fewer harvested acres.	Thus the same types of effects as Alternative C but on fewer harvested acres.
mushrooms	Common in area.	Alternative A, with no treatments, would not have effects on this species.	Alternative B has timber harvesting in numerous stands. Mushroom crops on areas clearcut or patch clearcut would be temporarily disrupted. Other areas are unlikely to be affected.	Alternative C has less harvesting than Alternative B so there would be fewer effects.	Alternative D has less harvesting than Alternative C so there would be fewer effects.
paper birch bark	Paper birch is a component of many hardwood or mixed hardwood/conifer stands throughout the project area. It stump sprouts. This would provide future opportunities for bark gathering. Maps of future	Alternative A, with no treatments, would not have effects on this species, although it also does not regenerate more trees for the future. Maps of future	154 acres of harvesting converting it to other species along with 68 acres of harvesting but regenerating paper birch. This would remove most of the large birch in these stands, making them unavailable for birch bark peeling, unless they are peeled prior to harvesting. Decreased paper birch available for gathering bark by	Alternative C has less conversion (138 acres) and less regeneration (48 acres). Decreases gathering bark by 186 acres now with a future reduction of 138 acres. Alternative C has less harvesting than Alternative B so there would be fewer	Alternative D has less conversion (25 acres) and less regeneration (25 acres). Decreases gathering bark by 50 acres now with a future reduction of 25 acres. Alternative D has less harvesting than Alternatives B and C so there would be

Special Resource	Existing Condition or Current Information	Alternative A	Alternative B	Alternative C	Alternative D
	harvest sites are provided to LLBO for gathering.	harvest sites are provided to LLBO for gathering.	222 acres now with a future reduction of 154 acres. In 60 to 80 years the 68 acres would again contain large paper birch. Maps of future harvest sites are provided to LLBO for gathering.	effects. Maps of future harvest sites are provided to LLBO for gathering.	fewer negative effects. Maps of future harvest sites are provided to LLBO for gathering.
pine cones	Red, jack, and white pine are common. Thinning of pine stands removes some trees from production but makes the residual trees more productive.	Alternative A, with no treatments, would not have effects on this species.	1,211 acres of harvesting in red, white, and jack pine. About 434 acres of red and jack pine are being clearcut and lost to production for several years. About 777 acres of uneven-aged or intermediate cuts for more productivity.	1,117 acres of harvesting in red, white, and jack pine. Less clearcutting (about 17 acres) but more uneven-aged or intermediate cuts (1,100 acres).	852 acres of harvesting in red, white, and jack pine. Less clearcutting (about 7 acres) but more uneven-aged or intermediate cuts (845 acres).
porcupine	This animal and its habitat are common in the project area and on the Forest. They browse on young to middle aged pine.	No harvesting in Alternative A, so the pine remains for them.	Pine are common now and would continue to be common for decades, with the proposed planting in Alternative B ensuring that they would continue well into the future.	The same effects as Alternative B.	The same effects as Alternatives B and C.
plum, chokecherry, pin cherry *Prunus*	These fruiting shrubs are typically seral shrubs in forested communities.	No harvesting so no disturbance. Not released for better growth. Not planted in wildlife openings, so it is not benefited there.	Alternative B would have harvesting and release in stands where these species exist. Increased sunlight from harvesting helps it. Physical damage from logging hurts it temporarily. Some may be planted in 5 acres of wildlife openings. Release leaves most fruiting shrubs intact rather than cutting them and setting their age/growth back as in the past.	Alternative C has less harvesting than Alternative B so there would be fewer effects.	Alternative D has less harvesting than Alternatives B and C so there would be fewer effects, but has 2 acres more planting in wildlife openings.
Raspberries *Rubus idaeus*	Red raspberry is a thicket forming shrub. Most seedlings germinate the first year after	Alternative A has no harvesting or scarification to encourage it.	It would become common for several years in highly disturbed locations in harvested stands.	Alternative C has less harvesting than Alternative B so there would be fewer beneficial effects.	Alternative D has less harvesting than Alternatives B and C so there would be fewer beneficial effects.

Special Resource	Existing Condition or Current Information	Alternative A	Alternative B	Alternative C	Alternative D
	disturbance.				
sage	It grows in full sunlight in dry shallow soils. It tolerates moderate shade well	Alternative A, with no treatments, would not have effects on this species.	Alternative B would harvest in a few stands that sage prefers, e.g. 81 acres of jack pine clearcutting. This would be a temporary loss due to top-killing, but it would sprout.	Alternative C has less harvesting on dry sites (no jack pine clearcuts) than Alternative B so there would be fewer effects.	Alternative D has less harvesting (no jack pine clearcuts) than Alternatives B and C so there would be fewer effects.
red willow diamond willow *Salix spp.*	Willow typically grows along river banks, or near streams, lakes, and ponds. Willow readily sprouts if it is cut.	Alternative A has no harvesting or riparian planting to disturb the willow.	Few treatments in riparian areas. If crushed or cut it would resprout with only a loss of size for a few years.	The same effects as Alternative B.	The same effects as Alternatives B and C.
spruce - white/black	White spruce is shade tolerant and fire intolerant. It is common and occurs as an understory, sub-dominant, and dominant tree species in many forest types. Black spruce is primarily a wetland species.	Alternative A, with no treatments, would not have effects on this species, although this also does not provide more young trees for the future.	Alternative B has thinning in one stand (58 acres) of white spruce so no loss of the forest type. There are 15 acres of conversion of aspen and openings to white spruce. The thinning would improve the vigor of the white spruce. No treatments in black spruce.	Alternative C has the same treatments as Alternative B. Thus the same effects as Alternative B.	Alternative D has the same treatments as Alternatives B and C, plus 2 more acres of conversion. Thus essentially the same effects as Alternatives B and C.
sugar maple	This species is discussed earlier in this table as one of the "special resources".				
Blueberries *Vaccinium angustifolium*	Blueberries are generally associated with fire dependent and fire tolerant forest stands, especially red and jack pine stands on sandy soils. Shade is detrimental to the growth	Alternative A has no harvesting, burning, or treatments to increase blueberry production, but also none to disturb existing plants.	Alternative B has 81 acres of jack pine clearcutting, scarification, and planting; 79 acres of conversion to jack pine; and 139 acres of thinning jack pine: but only 43 acres of burning. All of these would increase berry production due to increased light to the forest floor and	Alternative C defers the jack pine clearcutting and 65 acres of the conversion, but gains 432 acres of burning so would have many fewer beneficial effects on blueberries from harvesting, but much benefit	Alternative D is similar to Alternative C for blueberries.

Special Resource	Existing Condition or Current Information	Alternative A	Alternative B	Alternative C	Alternative D
	of blueberry.		a decrease in competing vegetation in the few sandy soil stands where blueberries are found, but also some disruption of existing plants due to logging equipment operations and mechanical scarification. Benefits should last 5-20 years until the tree crowns close again.	from burning.	
Species of interest or concern to the LLBO (Table 3.3.3.3.2.1.d in Specialist Report)	**Existing Conditions**	**Alternative A Effects**	**Alternative B Effects**	**Alternative C Effects**	**Alternative D Effects**
Sweetfern *Comptonia peregrina*	Grows on droughty sites such as sandy banks, sand dunes, along roads or under powerlines. It is a shade intolerant invader of newly opened canopies and disturbed sites.	Alternative A, with no treatments, would not have effects on this species, although it also does not release the species for improved growth.	Alternative B has some timber harvesting in stands that could be habitat for this species, e.g. jack pine or red pine. It would be more vigorous and dense after treatment.	Alternative C has less harvesting in jack pine than Alternative B so there would be fewer effects.	Alternative D has less harvesting than Alternatives B and C so there would be fewer effects.
Partridge berry *Mitchella repens*	Grows in mildly acidic, well-drained mesic soil, and mossy hammocks and bogs and surrounding upland woods; in mid-age paper birch forest on north slope to hardwood wetland; in jack pine with twinflower understory.	Alternative A, with no treatments, would not have effects on this species.	Alternative B has harvesting in forest types that could contain this species. It could affect individuals of this species but regeneration from rhizomes should repopulate the area.	The same effects as Alternative B.	The same effects as Alternatives B and C.
White pine *Pinus strobus*	This is a management indicator species (MIS) in	Alternative A, harvests no white	Alternative B has 6 acres of thinning in white pine for increased growth.	Alternative C adds 30 acres of underburning in white	Alternative D has the same harvesting and burning as

Special Resource	Existing Condition or Current Information	Alternative A	Alternative B	Alternative C	Alternative D
	the Forest Plan. Need to increase white pine across the landscape. It is moderately shade tolerant	pine, but also does not increase it.	It is being planted on about 89 acres of stands, usually as a small component. This includes riparian area planting and opening conversion. Thus increased for the future.	pine with minor mortality expected but also possible regeneration and adds 3 acres of planting. Thus Alternative C may be slightly more beneficial than Alternative B.	Alternative C but loses 29 acres of underplanting. Thus compared to Alt. B it benefits from burning but loses regeneration.
New England violet *Viloa novae-angliae*	Found in moist woods sites.	Alternative A, with no treatments, would not have effects on this species.	Alternative B has harvesting in "moist woods," so disturb some plants, since the harvesting may be done in the summer but only a few acres impacted.	The same effects as Alternative B.	The same effects as Alternatives B and C.
Barren strawberry *Waldsteinia fragarioides*	It is found in moist to dry pine forests and clearings.	Alternative A, with no treatments, would not have effects on this species.	Alternative B is harvesting in 1,205 acres of red and jack pine, so there could be mechanical impacts to the species.	Alternative C has less harvesting (1,111 acres) than Alternative B so there would be fewer effects.	Alternative D has less harvesting (846 acres) than Alternatives B and C so there would be fewer effects.
Wild rice *Zizania aquatica*	It grows in shallow water and could be impacted by sedimentation.	Alternative A, with no treatments, would not have effects on this species.	Alternative B with no management in water and with BMPs to prevent sedimentation into water would have no effect on this species.	The same effects as Alternative B.	The same effects as Alternatives B and C.

3.3.4 – CUMULATIVE EFFECTS

Spatial framework and Timeframe:

(Same as for Direct and Indirect Effects.) Plus, treatments on other ownerships. Treatments on private land are not readily available for gathering and not well documented so not included here.

Past Impacts:

Traditional resources resulting from treatments on private land are not readily available for gathering and the treatments are not well documented, so are not considered.

Harvesting and other treatments on State, Tribal, and County lands have about the same impacts as similar treatments on NFS lands. Over about the last 10 years LLBO has clearcut about 200 acres for timber management and for housing development. (PR# 418a) The State and Counties have harvested small acreages.

From 2003 to 2009 on NFS lands in the four previous EAs that covered the KRM EA area there were 3,975 acres of harvesting (an average of 497 acres per year). The proposed cutting in KRM EA area is 2,959 acres in Alternative B (an average of 296 acres per year over a decade), which is about 60% of the previous level of cutting. Alternatives C and D are 2,581 and 1,546 acres respectively (258 and 155 acres per year respectively). (PR# 419) This past harvesting has resulted in the resources that are being gathered now or has removed some old trees from production (e.g. birch bark).

In general, more harvesting results in more impacts to traditionally gathered resources and clearcutting/prescribed burning have the greatest impacts. Alternative A has no harvesting so would lower the average harvesting levels and lower the trend of impacts.

Management by prescribed burning for blueberry production or other berries or fruiting shrubs and for ecosystems was prescribed in most of the past 8 years of EAs. With essentially no prescribed burning, Alternatives A and D would reduce the average amount of burning. With two large ecosystem prescribed burns under old pine, Alternatives B and C would reduce the average amount of burning.

Present Impacts:

In 2010 the State plans about 30 acres of harvesting including 24 acres of partial cutting in northern hardwoods and 6 acres of aspen clearcutting/regeneration (PR# 416). There is no known County or LLBO harvesting. The Forest Service is finishing the last 259 acres from Rambling Woods EA. In total this is a very small amount of harvesting.

Future Impacts:

In the next 5 or so years Beltrami County has plans to harvest about 375 acres in the KRM EA area with ¾ of it being clearcutting, and the remainder thinning (PR# 415). The State has only 30 known acres of partial cuts and clearcuts. Over the next few years the LLBO has plans to clearcut 30 acres and thin 40 acres of pine. (PR# 418a) The Forest Service has no plans for additional timber sales (beyond KRM) in the next 10 years in the KRM EA area. In the longer term it is probable that there would be more similar sales. There would be continued treatments that indirectly benefit blueberry production, berries, and fruiting shrubs. Under the action alternatives, this would continue to be at least as productive for gathered resources as it has over the last decades. Plans on private land are unknown, but would probably be as little as in the past.)

Activities on the State, LLBO, and private lands would impact traditionally gathered resources much the same as the activities on NFS lands and in the KRM EA area EA. These resources are the by-products of vegetation management, e.g. timber sales or fuels management. It is likely that the past types and amounts of management would continue into the future for at least the next 5 years and probably for 25 years or more. This should be enough disturbance to maintain resources such as blueberries, other berries, and wildlife. Alternative A if applied to KRM EA area and future analyses in the area would result in a reduction of these traditionally gathered resources on NFS lands, thus making them less available or putting more pressure on other ownerships to supply them. Meetings were held with the Sugarbush, Mission, Cass Lake, and Cass River Local Indian Councils, which

are all in or adjacent to this project area and they all expressed concerns over this project reducing traditionally gathered resources.

3.4 - WATER QUALITY AND WATERSHED HEALTH/AQUATIC SYSTEMS AND FISHERIES

3.4.1. - SCOPE OF THE ANALYSIS

Spatial Framework:

The riparian management zone (RMZ) of lakes and streams (100 foot near bank and 100 foot remainder zones) for activities that can lead to sedimentation. Activities outside of the RMZs would have little impact on aquatic resources from sedimentation because soil erosion would be minimized. The sub-watershed (HUC 6) was found to be the most appropriate scale for analyzing the direct, indirect, and cumulative effects of land clearing or timber harvest on runoff regimes; which in turn affect channel forming flows, erosion and sediment deposition, and ultimately water quality (PR# 19, Verry et al. 1983) (Indicator 2).

Timeframe:

For bare soil, about 1 to 2 years until revegetation stabilizes and potential erosion ceases. For activities related to vegetation management where open condition is created (i.e., roads and regeneration cuts), the effects would extend for 15 years. It was found by Verry et al. (PR# 19, 1983) that impacts to runoff regimes related to clearcutting last until the stand is 15 years old, assuming regeneration has occurred.

3.4.3. - EXISTING CONDITION/AFFECTED ENVIRONMENT

None of the key issues but three of the non-key issues dealt with fisheries or water quality, plus there are topics of concern that were not captured in the issue statements but still need to be discussed.

Non-key Issue: Harvesting near the Mississippi River may negatively affect wild rice.

(This was discussed in Section 3.3 Traditional Resource Gathering and will not be discussed further in the water quality section.)

Topic of Concern: Permanent road densities are potential sources for erosion and sedimentation and can interrupt hydrologic function.

(The higher the road density, the greater the potential for impacts to aquatic resources (PR# 41h, Trombulak and Frissel 2000). Roads that lie within the RMZ and that cross rivers and streams can be particularly problematic (PR# 41g, Jones et al. 2000). Because there would be no permanent road building or decommissioning under any of the alternatives, road densities within the RMZ is not used as an effect to analyze the alternatives.)

Non-key Issue: Harvesting, roads, and other vegetation management activities, especially in riparian zones or near wetlands, may cause water quality/visual problems.

Indicators:

Same as for the Topic of Concern below.

Topics of Concern: Roads and other vegetation management activities may affect water quality, aquatic resources, and wetlands.

Indicator 1:

Acres of harvesting within 200 feet of riparian areas or wetlands.

Effects from this harvesting.

Acres of RMZ (area within 200 ft. of lakes and streams) disturbed during vegetation management activities.

Indicator 2:
Percentage of upland in sub-watersheds in young and open condition. (cumulative effects only)

Non-key Issue: Management near wetlands or filling wetlands has negative effects on the wetlands.
Indicator:
Effects of treatments to wetlands other than RMZs.

The 81,581 acre Kitchi Vegetation Management Project Area includes proposed activities in or adjacent to 16 6th Level Sub-Watersheds [Hydrologic Unit Code (HUC) 6]. These watersheds, or analysis units, comprise the aquatics analysis area and total 263,975 acres. The analysis area includes 181 miles of streams, 95,368 acres of lakes, 55,353 acres of wetlands (not including open water wetlands already included in lake acres), and 14,027 acres of Riparian Management Zone (RMZ). About 853 miles of roads and trails have been built within the analysis area across all land ownerships, with 486 miles of those being Forest Service roads.

Soil erosion from harvest related activities can lead to impaired water quality and sedimentation to aquatic organism habitat (e.g., fish) (PR# 10a and 25, Burns 1970, Ryan 1991). Sediment derived from vegetation management activities (timber harvest) can reduce or degrade spawning habitat by filling interstitial spaces in course substrates required by lithophilous (i.e., fish that spawn on course substrates, such as walleye) spawning fishes for egg incubation (PR# 10a, Burns 1970). These interstitial spaces also provide habitat for invertebrates that many fish feed upon. Sediment can also reduce water clarity, which impairs the foraging efficiency of some sight-feeding fishes (PR# 20, Berkman and Rabeni 1987).

The potential negative effects on aquatic organisms from increased sedimentation are numerous. For example, sediment added to aquatic systems similar to those in the analysis area can impact fish, mussel, and invertebrate communities by altering community composition (PR# 25a and 36e, Ryan et al. 1991, Jones III et al. 1999), reducing carrying capacity (PR# 10d and 36d, Burns 1972, Watters 1999), creating conditions favorable for non-native species (PR# 69, Dunham et al. 2003), or reducing population viability (PR# 69a and 69b, Gleason et al. 2003, Regetz 2003). The mechanisms responsible for these impacts are numerous and often complex, therefore they will not be discussed in detail here.)

3.4.4 – EFFECTS
3.4.4.1 – DIRECT AND INDIRECT EFFECTS

3.4.4.1.1 -- Treatments near Riparian Management Zones (Indicator 1)

Under **Alternative A** no boat landing improvements or toilet would be built and no vegetation management would be conducted in or adjacent to RMZs, thus direct and indirect effects would be zero. RMZs impacted by past activities would continue to move slowly towards desired riparian conditions through stand aging and natural conversion or stay the same.

For **Alternative B**, 27 stands that intersect the RMZ would receive some type of harvest treatment. The RMZ within these stands total 77 acres, approximately 25 acres of inner zone and 52 acres of remainder zone.

Alternative B is not expected to have significant effects on the RMZs ability to provide protection for aquatic resources. The components of the RMZ such as shading, large wood habitat source, nutrient inputs, and streambank composition are protected to a large extent by the near-zone RMZ. Between the alternatives, potential sedimentation to water courses that lowers water quality and habitat quality for aquatic organisms is expected to be highest for Alternative B due to the greater number of management activities in the RMZ. Alternative A would have the lowest potential for sedimentation.

Management activities can potentially impact the water quality of streams, lakes, and wetlands within the project area through soil disturbance and compaction. These alterations can lead to impaired surface and subsurface water flow and increased sedimentation and nutrient input into water bodies. Activities within the RMZ can reduce its effectiveness as a nutrient and sediment filter (PR# 36ca, Sheridan et al. 1999) and reduce coarse particulate organic matter (i.e., leaves and detritus) or woody debris inputs into lakes and streams (PR# 31c, McHenry et al. 1998). This can negatively impact the habitat of many aquatic organisms (PR# 51, Prepas et al. 2001). Sedimentation to streams from activities such as logging has also been found to negatively impact mussel habitat quality, resulting in reduced population viability (PR# 36d, Watters 1999).

The cause-effect relationship among vegetation management activities, soil erosion, and sedimentation to watercourses is well described in the literature (PR# 21, 26, and 51b, Riekerk et al. 1988, Marion and Ursic 1993, Swank et al. 2001). However, the amount of sediment entering lakes and streams from this activity is highly variable and dependent upon the amount of soil exposed, the soil type, steepness of slope, weather conditions, and the treatments following disturbance (PR# 21a, Swank et al. 1989). Because of the variability in these factors, predicting the amount of sedimentation is impracticable. Voluntary Site-Level Forest Management Guidelines (PR# 72b, MFRC 2005) would be implemented to ensure that water quality is maintained, through the use of filter strips. Research on the use of similar filter-strip buffers has shown that they are very effective in reducing sediment and nutrient inputs into streams and lakes that are derived from logging and other ground-disturbing actions (PR# 26a, 41f, 71a, and 78, Osborne and Kovacic 1993, Gharabaghi et al. 2000, Aust and Blinn 2004, Croke and Hairsine 2006). Impacts to water quality through soil disturbance and compaction is expected to be minimal since most stands would be harvested during winter, under frozen conditions, or during summer on dry soil conditions under the three action alternatives. Similarly, the aforementioned harvest conditions would minimize potential negative impacts to aquatic organism and their habitats from sedimentation and increased flows resulting from compacted soils.

In addition to harvesting there are 17 instances of riparian planting that would not expose much mineral soil so not cause erosion or sedimentation; plus 2 road closure/upgrading which would if anything prevent additional erosion.

Three boat landings in the project area have been identified as needing additional parking. Each landing site would have additional parking areas constructed within the RMZ. These areas would be at most 2 acres at each site. Impacts to water quality would be minimized by designing adequate drainage that traps sediment washed off the parking surface. Also there is a proposed toilet on Star Island that would be within the RMZ. This would include bringing equipment across the lake, digging a hole, installing a toilet, and landscaping the disturbed site. In all probability most of the ground disturbing activity would be in the winter with ice and snow cover. Under these conditions, with the flat site, and with the dense ground vegetation cover to catch sediment; there should be no erosion or sedimentation. Even if done in the summer the vegetation and flat slope would prevent erosion and sedimentation. There is no expected water quality impact from construction or use of any of these facilities.

For **Alternative C**, 25 stands that intersect the RMZ would receive some type of harvest treatment. The RMZ within these stands total 73 acres, approximately 24 acres of inner zone and 49 acres of remainder zone. The effects of Alternative C are similar to those for Alternative B just on fewer acres and stands.

The effects from the 17 riparian plantings, 1 road, three boat landing parking lots, and the toilet would be the same as in Alternative B. The only difference is the road to Bass Lake is being fixed and opened rather than closed. This would confine existing users to one access road rather than numerous ones. The road would not lead to more erosion/sedimentation due to the flat topography. It would not be a boat landing, other than carry-in, so should not disrupt the shoreline much but could leave a bare area where canoes and tiny boats are dragged in and out.

For **Alternative D**, 12 stands that intersect the RMZ would receive some type of harvest treatment. The RMZ within these stands total 18 acres, approximately 5 acres of inner zone and 13 acres of remainder zone. The effects of Alternative D are similar to those for Alternative B just on fewer acres and stands.

The effects from the 17 riparian plantings, 2 roads, two boat landing parking lots (dropping Andrusia) and the toilet would be the same as in Alternative B.

3.4.4.1.2 -- Young and Open Conditions (Indicator 2)
Due to the sub-watershed scale used and the need to include all ownerships, this indicator is only valid when considering cumulative effects and will be discussed in Section 3.4.4.2.

3.4.4.1.3 -- Treatments near Wetlands Other than RMZs
As shown in Table 3.3.3.2.2.a, there are a lot of wetlands overlapped by treatments in Alternatives B, C, and D. Most small wetlands are inclusions in larger stands that are of a different forest type. However not much, if any, of these acres would be impacted due to Forest Plan guidance and the timber in the wetlands. The Forest Plan requires filter strips or untreated areas around many types of wetlands and precludes driving through them, which would protect many of them. In other cases the timber type or vegetation type within the wetland is different from the main part of the stand, so would not benefit from the same treatment and would be left untreated.

The Big Lake Boat Landing project originally prescribed filling the wetland in the middle of the parking lot as the means of expanding the number of parking spots. This would have decreased the acreage of wetlands in the area and had impacts on wetland plants. This has subsequently been changed to leaving the wetland untreated and making the parking lot on the nearby upland. This eliminated the effects to the wetland.

3.4.4.2 – CUMULATIVE EFFECTS-
Spatial and Temporal Framework:
Same as for direct effects.

Indicator 1:
Due to the spatial scale of acres of RMZ within potential harvest units and a one to two year timeframe for increased potential for sedimentation, cumulative effects are equal to direct effects for this indicator. Past harvest within the analyzed stand's RMZs is not currently contributing sediment and no additional harvest is expected in the foreseeable future.

Past (Indicator 2)
Indicator 2 compiles past and future activities with each alternative in order to analyze cumulative effects. As described under Indicator 2 in Section 3.4.3, land clearing or timber harvest resulting in open upland forest conditions over a large (60%) percentage of the watershed area can result in changes to peak snowmelt run-off quantity and timing; which in turn affect channel forming flows, erosion and sediment deposition, and ultimately the water quality and aquatic habitat (PR# 19, Verry et al., 1983). Using young and open conditions from a 1996 survey and updated with stand data covering federal, state, and county land, sub-watersheds within the aquatic analysis area have a young or open condition ranging from 1 percent to 28 percent as of 2010. Since 1996, 6,430 acres of young upland forest was created through harvest while 15,962 attained age sixteen within the aquatics analysis area on federal, state, and county land. This trend shows a reduction in the percentage of young and open condition, going from 13 percent (13%) in 1996 to 9 percent (9%) in 2010. Alternative A reduces the amount of young and open conditions, while Alternatives B, C, and D continue to create more as in the past.

Present (Indicator 2)
Under Indicator 2, the implementation of proposed regeneration prescriptions would contribute to the young and open forest condition in all 16 of the sub-watersheds within the analysis area. Alternative B includes 1,542 acres of stand regenerating prescriptions in upland forest types, Alternative C includes 626 acres, and Alternative D includes 262 acres. These harvest prescriptions would set the age-class of the stand back to zero or would create some regeneration patches within the stands, and would result in increasing the young and/or open component in the watershed. As a worst-case scenario, the whole stands will be included in the young category to see how close harvesting comes to the 60% threshold. After recalculating the open condition using the harvest activities proposed in the action alternatives, the percentage of young and open does not increase to more than 28 percent,

well within the 60% threshold identified by Verry et al. and the Forest Plan (see table 3.4.4.2.a for percentages by sub-watershed). Thinning, single-tree selection, group selection, and partial harvests would result in retaining more than 50 sq. ft. basal area, and would minimally affect runoff regimes and stream hydrology with mitigation measures in place.

Under Alternative A, young timber stands would continue to age and only the previously planned harvest of 650 acres would add to additional young or open forest on Forest Service land. Up to 562 acres of upland regeneration harvest would still occur on state and county lands, amounting to less than one half percent of total watershed acres. With this level of harvest the amount of young and open condition would continue to decline across ownership, and by 2020 young and open would decline to eight percent in the aquatics analysis area.

In addition to young forest created by timber harvest, some openings for wildlife habitat would be maintained under the action alternatives. These openings would continue to contribute very small amounts of land to young and open condition. The action alternatives also proposes to plant 35 acres of permanent openings which in the future would reduce young and open acres.

Temporary roads in the action alternatives contribute to a small increase in young and open condition compared to the no-action alternative; however the amounts have a negligible effect on young and open condition on the sub-watershed and aquatics analysis area scale and were not included in the percentages reported for Indicator 2.

Future (Indicator 2)

No other Forest Service projects are proposed within the next ten years in the project area, however up to 650 acres of regeneration harvest has yet to be harvested under previous projects. Future state and county harvest plans show an upland forest type regeneration harvest on up to 562 acres. Table 3.4.4.2.a shows cumulative percent young and open by alternative including past and future activities. The table represents the future conditions under each alternative assuming all planned harvest has occurred on federal, state, and county lands. Over the next ten years, an additional 5,235 acres of young growth is expected to age out, which would further reduce young and open in the analysis area by two percent below totals shown in Table 3.4.4.2.a.

Table 3.4.4.2.a -- Future Cumulative percent young and open by alternative including past activities and planned but not yet harvested stands on Forest Service, State, and County land. *

Sub-watershed Name	HUC 6	Acres	Alt A	Alt B	Alt C	Alt D
Andrusia Lake	070101010603	8,866	28%	28%	28%	28%
Cass L	070101010604	36,320	13%	14%	13%	13%
Big Lake	070101010605	15,356	19%	20%	19%	19%
Kitchi Cr	070101010801	14,419	6%	6%	6%	6%
Ravin Cr	070101010802	3,158	1%	2%	1%	1%
Lydic Bk	070101010803	4,966	24%	24%	24%	24%
Sucker Cr	070101010804	6,916	20%	22%	20%	20%
N Turtle R	070101010805	11,726	9%	11%	10%	10%
N Turtle R	070101010806	8,886	7%	7%	7%	7%
Turtle R	070101010810	5,664	14%	15%	15%	15%
Gull R	070101010902	7,924	22%	23%	23%	22%
Turtle R	070101010903	4,438	5%	5%	5%	5%
Turtle R	070101010904	4,280	7%	14%	12%	7%
Turtle River L	070101010915	6,316	28%	28%	28%	28%
L Winnibigoshish	070101011003	106,334	3%	3%	3%	3%
Mississippi R	070101011009	18,406	9%	11%	9%	9%
Total Aquatic Analysis Area		263,975	10%	10%	10%	10%

* Source: GIS data, 2010.

The above analysis indicates that activities in the sub-watersheds and riparian areas on all ownerships would be similar to past levels; most of the potential erosion and resulting sedimentation would be related to existing roads. However, some sedimentation can be expected from activities related to timber harvest. Minnesota's emphasis on educating loggers to follow the Voluntary Site-Level Forest Management Guidelines (PR# 51c and 57a, Philips 2001; Philips and Dahlman 2002) and the other measures used on CNF land (see Spatial Framework Section) would help to limit erosion and sedimentation within the analysis area and keep these impacts to a minimum. The foregoing information implies that cumulatively there would not be a sedimentation problem related to project activities.

3.5 – FISH/AQUATIC ORGANISMS

Due to the interconnected nature of Water Quality and Fisheries/Aquatic Systems these two analyses have been combined in Section 3.4.

3.6 - FIRE

3.6.1. - SCOPE OF THE ANALYSIS

Spatial framework:

The scope of analysis includes the area within the Kitchi Boundary, including the area within the immediate vicinity of treatment units for vegetative effects.

Air quality is affected by smoke from fires. Smoke can drift for miles, so is analyzed for several five miles downwind, by which point it should be well overhead and well mixed with other air.

Timeframe:

Timeframes for vegetative effects are about 5 years past and 5 years in the future by which time harvesting would be completed. The 5-year timeframe is an average of monitoring effects of prescribed burning, pile burning, and mechanical fuels treatment. Effects to be monitored include mortality, consumption, fuel depth, fuel height, and regeneration or retardation of vegetation such as blueberries. (Ottmar and Vihnanek 1999, Reinhard et al. 1996, Ferguson 1988 (2001), Riebau 1988,) (PR# 36b, 30, 20a, and 20b).

For smoke this considers work within the last 5 years and the next 5 years; smoke is a very short-term effect, but we look at a few years to see how often these short-term "annoyances" occur. These 5 years covers the time we have FACTS data or can reasonably estimate burning. Actual cumulative effects of smoke between nearby burns are more in a timeframe of 1 to 2 weeks. (Ottmar and Vihnanek 1999, Reinhard et al. 1996, Ferguson 1988 (2001), Riebau 1988,) (PR# 36b, 30, 20a, and 20b).

3.6.3. - EXISTING CONDITION/AFFECTED ENVIRONMENT

None of the key or non-key issues dealt with fire or smoke, however it is a resource that needs to be looked at in the analysis of effects from the treatments, as a topic of concern.

Topic of Concern: The Kitchi EA area is in a fire dependent ecosystem. If more prescribed fire is not used for management the nature of the ecosystem would change.

Indicators

Acres of proposed prescribed burning

Topic of Concern: Burning produces smoke that affects air quality and visibility.

Indicators

Acres of proposed prescribed burning

Topic of Concern: Mechanical fuels treatment as an alternative to burning can affect soils.

Acres of proposed mechanical fuels treatments

Understory burns and ecosystem burns affect enough area that the landtypes and potential changes in wildfires are important. Certain stands to be burned are harvested prior to treatment, so natural fuels are crushed or broken up. The fuels to be removed are those plus "activity fuels" (branches, leaves, and broken logs left after the harvesting). Fuel treatments in harvested stands would reduce the accumulated fuel loading, while the harvesting would have changed the structure of the stands being treated, bringing conditions more in line with natural conditions. Other stands are being burned with no previous harvesting, so changes are only to the understory and ground vegetation and fuels. Changes in Condition Classes affect the quality of the ecosystems. Thus, the change of the current condition class towards Condition Class 1 is a movement towards returning the forest to historical conditions.

Due to the lack of fuel treatments in the Kitchi EA area, conifer stands on the forest are becoming prone to conditions that favor high intensity wildfires. The crown density has increased and crown base heights have lowered leading to conditions that could lead to crown fire initiation. Crown fires are hard to control; expense to retard; produce severe effects to the vegetation, wildlife, and watersheds; and are dangerous to fire personnel and the public.

Typically low-intensity, spring season prescribed fires (ecosystem or underburning) should also enhance blueberry heartiness and production within 3 to 5 years following most spring burns.

By reducing crown density and raising crown heights base heights in harvested areas, wildfires should not convert to crown fires. Thinning stands and removing activity/natural fuels should reduce suppression costs and increase the safety of the firefighters and the public.

Thinning by reducing the amount of trees per acre reduces crown density and continuity of the fuels although it does produce activity fuels. These activity fuels could be treated mechanically or by burning. Burning could range from pile burning to broadcast burning.

Smoke comes mainly from prescribed burning, which is not a common occurrence in this project area. Presently there are no known air quality problems in the KRM area. Air quality and visibility in the analysis area are good to excellent. The Chippewa National Forest is in a Class II Airshed, which allows some temporary air quality impairment.

Provisions of the Minnesota Smoke Management Plan (PR# 164) would be designed into the prescriptions for all of the burning. This would minimize effects to air quality.

3.6.4 – EFFECTS

3.6.4.1 – DIRECT AND INDIRECT EFFECTS

3.6.4.1.1 – ALTERNATIVE A (NO ACTION)

There would be no harvest and consequently no activity fuel generated from mechanical operations. Prescribed fire would not be used for pile burning or broadcast/underburning/ecoburning, therefore no Condition Class improvement would occur. The stands would continue to age and therefore contribute to higher fuel loadings and be susceptible to insect, disease, and wind events that would eventually contribute to higher fuel accumulations. Possible benefits for blueberry production would not occur and suitable habitat would probably decrease due to increased shrub densities and a dense litter layer. There would be no jack pine thinning to reduce the fire hazard near the Flora Lake community.

There would be no smoke from prescribed burning.

3.6.4.1.2 – ALTERNATIVE C (PROPOSED ACTION)

Alternative C treats 920 acres for fuel reduction.

Prescribed burning would be used for fuel reduction and ecosystem management. There are 278 acres of ecosystem burning, 169 acres of understory burning after harvesting, thinning 139 acres of jack pine, pile burning on 28 acres of stands, and mechanical/hand removal of fuels on 306 acres.

Any type of burning would produce smoke and have certain effects upon sensitive receptors (e.g. homes, public buildings, etc.). Any identified receptors that could be affected by smoke and its particles would be mitigated by burning in conditions that would minimally impact identified receptors. Although there are substantial acres to be burned, such as the ecosystem burns, the burn units would be broken up into manageable burn blocks to help reduce smoke emissions. All burning would be in compliance of Minnesota Smoke Management guidelines.

Broadcast/Underburning/Pile burning

Broadcast burning for ecosystem management on harvested sites (169 acres) and unharvested stands (278 acres) would benefit hazard fuel reduction objectives by reducing the fuel load of accumulated slash and activity fuels and would make/maintain desired ecosystem conditions. These are almost all red pine (with one unharvested white pine stand and two openings). There would be the estimated removal of at least 30% of the 1000 hour fuels to about 60% of the 1 hour fuels on at least 60 to 80% of the burn area, with some limited duff removal. Smoke from broadcast burning could produce large amounts of smoke depending on the timeframe of the burn, fuel conditions and speed of ignition. Residual smoke would linger and is dependent upon of the consumption of the fuels and mop-up standards of fire management. Smoke and other hazards would be fully evaluated prior to ignition.

Ecosystem and underburning are hotter, faster burning fires than piles. They can be done at the rate of 40 to 100 acres per day, so if all done at one time it would take 5 to 10 days to finish the burning. Within 2-3 days of completing a burn the fires have burned out and there is no more smoke.

The harvested underburning is expected to be done only once per stand but the 278 acres of ecosystem burning could be done every 3 to 6 years for several times to maintain desired conditions. Thus during the 5 year analysis period, there could be two ecosystem burns with two periods of smoke, each lasting a matter of days to weeks so not overlapping. Broadcast burning in any stand would reintroduce fire into the ecosystem that have had a decreased fire return interval due to fire suppression, with the following beneficial results:

Nutrients would be released by the fire.

Native plants in fire dependent ecosystems would be provided an opportunity to be re-established.

Condition Class would be improved.

The thinning of 139 acres of jack pine by the Flora Lake community would reduce the hazard of wildfires, especially crown fires, to the nearby houses.

Mitigation measures for smoke and burning are found in Appendix H.

Pile Burning

Smoke is expected to come from the burning of slash piles in some timber sale units (28 acres of stands). Pile burning is expected to be done only once per stand, just after the harvesting is completed.

If slash is piled and burned (up to 28 acres in Alternative C), the surface area immediately under where these piles have burned would be devoid of any vegetation anywhere from 1 to 4 years (J. Tobin, R. Rockis; personal communication). This timeframe depends on the arrangement of the pile, size of the pile, intensity of the fire, seed bank on site, and weather conditions during the time of the burn. Usually the vegetation reestablishes within 1

year, however; those species reestablishing are of a more undesirable varieties. This is mitigated for in many cases, by planting native grass and forb seed mixes relative to what is on the site. Usually after 4 years pass, the result of the burning goes unnoticed. Again depending upon the aforementioned characteristics, surrounding vegetation (within 50 feet of the pile) may experience short term effects such as wilt or scorch but usually rebounds within the growing season or within a year.

Pile burning is done in the winter when the piles are snow-free and relatively dry and there is snow to prevent the fires from spreading. This produces a relatively smoky fire that would burn for two to three days in each pile before consuming everything. They are very localized fires, so with the low density of houses, it is unlikely that smoke drifting even 5 miles would still be concentrated when affecting a house. This is only done one time so has limited effects. If slash is piled and burned, smoke in the near vicinity may be heavy during the initial ignition of these piles but is expected to dissipate and lift shortly thereafter. Although smoke may be emitted from the pile for up to approximately 30 days, only during the initial timeframe (2 days) would the smoke be emitted in any volume and would dissipate thereafter. The MN Smoke Management Plan (PR# 164) would be followed regarding emissions and specific guidelines. This would minimize effects to air quality.

Mitigation measures for smoke and burning are found in Appendix H.

Mechanical Treatment and Consequent Activities
The 306 acres of fuel removal by hand, mechanical, or biomass methods would reduce the fuel loading, while not having the benefits or hazards of fire and smoke.

Activity fuels from harvest operations, where burning is not desired, can be piled and left, scattered, masticated, or removed by biomass harvesting to reduce fuel concentration This would reduce fuel loadings and minimize fire intensity from prescribed burns or if wildfires occur

Treating fuels mechanically would not produce smoke that could affect sensitive receptors (e.g. homes, public buildings, etc.). Mechanical Fuels treatment is easier to control than burning and is not subjective to weather, fuel conditions or national concerns. Mechanical fuels treatment can be costly, subject to operators schedule and may not produce the benefits that a burning regime could produce.

Thus, Alternative C benefits the area by reducing fuels, reducing fire intensities, and lowering suppression costs.

3.6.4.1.3 – ALTERNATIVES ALTERNATIVE B
Alternative B would produce the same types of effects as Alternative C but with fewer treated acres (882 total acres). This is burning (43 acres underburned and 95 acres of pile burning stands) or otherwise treating (139 acres thinned and 605 acres of fuel removal). This would be fewer ecosystem benefits but more fuels reduction. There would be much less smoke produced. There would be fewer blueberry benefits with the reduced ecosystem burning and underburning.

3.6.4.1.4 – ALTERNATIVES ALTERNATIVE D
Alternative D would produce the same types of effects as Alternative C but with many fewer treated acres (598 total acres). This is burning (278 acres ecosystem burning, 169 acres underburned, and 18 acres of pile burning stands) or otherwise treating (133 acres of fuel removal). This would be the same ecosystem benefits but much less fuels reduction. There would be less smoke produced, but more than Alternative B due to the increased ecosystem burning and understory burning. There would be the same blueberry benefits as in Alternative C.

3.6.4.2 – CUMULATIVE EFFECTS
Spatial framework and Timeframe:
(Same as for Direct and Indirect Effects but on all ownerships of land.)

Past Impacts:
Cumulative effects of past vegetative treatments has contributed to the current conditions (e.g. fuel loading). The past effects of burning or not burning are the same as the associated effects listed in Section 3.6.4.1.2 since the treatment types were generally the same.

The following table will be used to examine past impacts. The activities shown are those that have the greatest effect on fire/fuels treatments.

Table 3.6.4.2.a -- Activities that Reduce Fuel Levels in KitchiArea

Activity	Acres done 2004 to 2010 from FACTS *	Acres proposed in Kitchi (Alt. B)	Acres proposed in Kitchi (Alt. C)	Acres proposed in Kitchi (Alt. D)
Timber Activity (thinning)	77	139	139	0
Ecosystem Burning	0	0	278	278
Understory Burning	0	43	169	169
Pile Burning	191	95	28	18
Non-burning removal	145	605	306	133
TOTAL	413	882	920	598

* FACTS -- PR# 465

Past mechanical, burning, and manual treatments that reduced fuel loading were 413 acres in the last 5 years or about 83 acre per year; of which 191 was burning or 38 acres per year. KRM EA is proposing about 598 to 920 acres of similar burning treatments in the Kitchi project. This is an average of about 88 acres per year in Alternative B (92 in C and 60 in D). This is about twice as much as the past average, so would be somewhat smokier; but still is a fairly small amount of burning and a matter of only one to two weeks out of the year. Alternative C has higher acreages and Alternative D have somewhat lower acreages. There has been no known prescribed burning on other ownerships in the KRM EA area in the past.

This burning has made smoke for short periods of time (a few days to weeks per year) the same as mentioned in the direct and indirect effects section. Prescribed burning on State, County, tribal, and private ownerships is not known but is not believed to have been much in the past in the KRM area.

Present Impacts:
There is no known prescribed burning or fuel reduction projects in the KRM EA area this year. Thus, there is no change in smoke from the past.

Future Impacts
There is no further proposed mechanical or burning treatment on NFS lands in the next 5 years in the KRM area other than the Kitchi project. There are no similar known treatments on other ownerships of land. Cumulative effects of future treatments can be correlated to the associated effects of those treatments listed in section 3.6.4.1.2 since the treatment types are generally the same.

There would be the impacts from treatments proposed in this document, plus some local and adjacent projects.

As a comparison Forest-wide, the last 24 EAs on the Forest, signed in the last 8 years (2002 to 2009), four of which included parts of KRM EA area, proposed about 27,138 acres of burning (combination of ecosystem burning, site preparation, and fuels reduction). This is an average of 1,131 acres per EA. Since only 138 to 475 acres of burning are proposed under Alternatives B, C, and D, the average amount of burning per EA would be reduced, so smoke and fire would be less common than the past in this area/Forest. Under Alternative A there would also be no burning, so no smoke. There is no known planned prescribed burning on other ownerships in the KRM EA area.

3.7 - RECREATION

3.7.1. - SCOPE OF THE ANALYSIS

The scope of the analysis is the Forest Service administered public lands and associated recreational improvements within the Kitchi project area. The project area is used to measure the effects, because it allows consideration of project-wide effects to existing recreation resources.

Timeframe

Direct and indirect consequences are considered for a period of five years. This timeframe was selected because the activities having the most impact occur within five years of the harvest.

3.7.3. - EXISTING CONDITION/AFFECTED ENVIRONMENT

There are one key issue and five non-key issues that are concerned with the recreation use of the area. However the key issue and 3 non-key issues are dealt with in other resource areas. There is also one topic of concern.

Key Issue 2. Traditional Resources and Uses:

(Traditional uses of the KRM EA area, including gathering are dealt with in Section 3.3 (Gathering and Traditional Uses) and will only be briefly mentioned in the recreation analysis.)

Harvesting near the Mississippi River may negatively affect wild rice.

(Wild rice gathering is a traditional use of the KRM EA area and is dealt with in Section 3.3 (Gathering and Traditional Uses). It will only be briefly mentioned in the recreation analysis.)

Management near wetlands or filling wetlands has negative effects on the wetlands.

(Management affecting wetlands is primarily the boat landings (Big, Andrusia, and Winnie). It is dealt with in Section 3.4 (Water Quality) and will only be briefly mentioned in the recreation analysis.)

Harvesting, roads, and other vegetation management activities, especially in riparian zones or near wetlands, may cause water quality/visual problems.

(Water quality effects have been dealt with in Section 3.4 (Water Quality) and will only be briefly mentioned in the recreation analysis. Visual effects have been dealt with in Section 3.12 (Visual Resources) and will only be briefly mentioned in the recreation analysis.)

Reducing upland aspen cover type acres would have a negative effect on wildlife species that depend on this forest type, particularly Ruffed Grouse.

Indicators:

Acres of aspen converted to other forest types.
Acres of aspen regenerated to aspen.
Impacts on ruffed grouse.
Impacts on hunting

Location of toilet on Star Island may affect cultural and heritage resources. Lack of improved restroom facilities perpetuates ongoing sanitation problems which may increase with increased use.

Indicators:

Effects on recreational use of Star Island.
Effects of the toilet on visual conditions, heritage resources, water quality, and soils.
Health risks.
Cost efficiency.

Topic of Concern - Access to Bass Lake:

Indicators:

Effects on a Unique Biological, ... Management Area (Gilfallen Area - orchids).
Effects on access to Bass Lake.
Effects on OHV use.

Recreational uses of the KRM EA area are common due to the abundant large lakes and rivers. Activities include dispersed recreation, boating, canoeing, fishing, camping, trail use, off highway vehicle use, driving for pleasure, and two hunter walking trail systems (Meadow Lake and Tower Lake). Other popular activities noted are: staying at resorts or cabins, cross-country skiing/snow shoeing, motorized water travel, and hunting.

Recreational opportunities within the project area fall into rural and roaded-natural recreational opportunity spectrum classes with an extremely minor amount of semi-primitive non-motorized (PR# 470, MN ROS Inventory 2004). {GIS maps show a small amount of semi-primitive motorized ROS west of Kitchi Lake but this is an error.}

Water access sites provide opportunities for water based recreation. The following lakes have some type of developed access and are within the project area: Winnie, North Twin, South Twin, Big Lake and Andrusia Lake.

The Lady Slipper Scenic Byway is called by many names: the Scenic Highway, a State Scenic Byway, a National Forest Byway, Forest Highway 3, is split between Cass County 10 and Beltrami County 39, and the southern end of it is part of the Great River Road National Scenic Byway. This road would be reconstructed utilizing Forest Highway funding and State highway funding. Construction began in late 2009. The county has applied for Federal Highways Enhancement funds to create two areas where the visiting public can safely pull off of the highway. The Mississippi River site and a Lady's Slipper Interpretive site just north of the Pennington Scientific and Natural Area are within the project area boundary. These sites would include parking and interpretive signing. The Environmental Assessment for Forest Highway 3 was completed in August 2007. The intrinsic values that these byways are noted for are scenic, natural, cultural, archeological recreational, and historic.

Off highway vehicle (OHV) use is moderate in the area. There are 67 miles of roads that are open for use by OHVs. OHVs are defined as all terrain vehicles (ATVs), off highway motorcycles, and off road vehicles (ORV's). OHV users are currently permitted to operate on designated low and high standard developed roads. Low standard roads are Forest Service roads that are planned, constructed, and maintained for future management use such as timber sale access. These roads are operation maintenance level (OML) 2 roads. They are managed for use by high clearance vehicles. Passenger car traffic is not encouraged on these roads. High standard roads are Forest Service roads managed for passenger car traffic. Mixed-use roads are higher standard roads that have been evaluated for use by passenger cars and trucks as well as OHVs. On these roads there is a high chance that cars and OHVs would share the road. These are OML roads 3-4. The Forest can construct up to an additional 90 miles of ATV trail under the Forest Plan. Cross-country travel is not permitted on the Forest.

There is a Unique Biological, ... Management Area (Gilfallen Area with a variety of orchids). between Bass Lake and North Twin Lake, which is being impacted by unauthorized vehicle traffic; and Bass Lake is a designated walk-in fishery, which is not walk-in if the road is open. There are 3 alternatives being considered that have different impacts - no action, close access, and develop proper access.

3.7.4 – EFFECTS
3.7.4.1 – DIRECT AND INDIRECT EFFECTS

3.7.4.1.1 – ALTERNATIVE A (NO ACTION)
Alternative A would maintain the current levels and types of recreation opportunities in the Kitchi EA area in their current state. Vegetation would not be directly affected with this alternative. Opportunities for hunting, fishing, and blueberry gathering in the project area would not change substantially over the short term. In the longer term there would be a trend toward less young aspen, which is a factor in good hunting for grouse and deer. Degradation of the area around Windigo Portage on Star Island would continue posing a health threat to recreationists and pets due to unmanaged human waste at this popular recreation destination. The unauthorized accessing of Bass Lake would continue, with negative effects on the special plants in the Gilfallen area and negative effects on the walk-in fishery of the lake.

There would be no improved parking at three lakes for increased safety.

3.7.4.1.2 – ALTERNATIVE B

Alternative B would provide for similar roaded natural recreation opportunities that currently exist. Dispersed recreation would continue to occur at current levels and use. Direct effects of harvest in this area would be from human and machine activity creating noise. Individuals participating in camping in the general forest area may be impacted by the treatments of the stands in the short term (1-5 years) and displaced due to management operations. The individuals participating in recreation at developed or dispersed sites would not be impacted by treatments or management operations because none of the stands where activities would take place are immediately adjacent to developed recreation sites.

Opportunities for fishing would not be directly affected with this alternative as there are no direct effects to the availability of fisheries or to water quality. The changes in the boat landings would affect safety and water quality at the landings, but are not intended to increase the amount or type of access to the water. Compared to Forest Plan S-RWA-1, we anticipate that the parking at Andrusia, Big, and Winnibigoshish Lakes would not be considered new landings. They would move existing parking along the main roads into designated parking lots rather than to encourage more people to use the areas.

The opportunity for hunting would be maintained at the current level, with 635 acres of aspen regeneration to provide a new age class of young aspen, which is the favored habitat for some of the more popular game species. There is 1,081 acres of aspen harvesting with 635 acres regenerated to aspen and 396 acres converted to other forest types (conifers, oak, and northern hardwoods). The clearcuts with natural regeneration in the Meadow Lake hunter walking trail system would provide a 245 acre, one-time influx of young aspen, as opposed to the patch cutting in Alternative C that would provide less young habitat now, but a more steady supply of it. The larger cuts in this alternative provide a greater site distance for shooting but provide fewer opportunities to "surprise" game species.

Individuals participating in dispersed recreation activities such as bird/wildlife watching, localized cross-country skiing, opportunities for solitude, and recreational gathering would experience short term impacts associated with management activities, but over time (1-5 years), would not be affected. The opportunity for berry picking may be enhanced over the long-term due to the use of prescribed fire to reduce shrub cover on about 43 acres of underburning after thinning. The road system under this alternative is adequate to meet the current dispersed and developed recreational uses of the project area.

Sanitation would improve with the addition of new toilet facilities near the Windigo Portage on Star Island. The visual impact of the toilet would be minimal because it would be placed away from the portage and would be constructed to blend in with the landscape. The new toilet would not have an effect on the numbers of people that visit the island but it would have a positive effect on their experience. Visitors would be able to walk or bike trails and use beaches that are free of the evidence of human waste. The new toilet would be sited in an area where cultural resource surveys have been conducted and produced a negative result. Water quality and health risks would be improved because waste would be contained in the vault instead of on the ground. A larger vault versus portable toilets would reduce the number of times a barge would have to travel across the lake with waste from once a week with portables to once a year or once every two years for the vault. This would decrease the risk water resources and also improve cost efficiency.

More parking would be available at three heavily used boat accesses which would increase safety for boaters who have had to park on nearby roads. Parking for Lake Andrusia would be located across Highway 12, parking at Big Lake would be expanded to an upland area to the east of the existing landing, and parking at the Winnie Campground landing would be expanded in an upland location.

Off highway vehicles would not be affected by the activities in this alternative, other than by Bass Lake where they were not legal anyway.

The closure of the unclassified road leading to Bass Lake and the increased enforcement in the Bass Lake and Peterson Property area should reduce the amount of illegal OHV use in the area. This would lead to less impact to the orchids/special plants in the Gilfallen area (trampling, root damage, etc). It would maintain the area as a dispersed recreation site where a walk-in fishery and carry-in access is featured. Access to Bass Lake would remain as it has been designated (carry/walk from North Twin Lake).

Effects on traditional resources and uses, wild rice, visual conditions, and wetlands are dealt with in other sections of this analysis.

3.7.4.1.3 – ALTERNATIVE C
Effects are similar to Alternative B, except as follows.

There are fewer harvest activities than in Alternative B, but they would still be apparent in the short-term. This alternative would maintain greater canopy cover in some stands, which would make the harvest less noticeable to the recreation users. In the long-term, existing scenic quality would again return as natural aspen regeneration develops into young stands and diameter growth is realized as a result of thinning pine stands along major travel routes.

Gathering opportunities particularly for blueberries and raspberries would increase due to the reduction in shrubs in the understory of harvested stands and increased prescribed burning (169 acres of under-burning after thinning and 278 acres of ecosystem burning).

The opportunity for hunting would be maintained near the current level with a longer term strategy for managing aspen stands, particularly adjacent to hunter walking trail systems. There is 895 acres of aspen harvesting with 392 acres regenerated to aspen and 396 acres converted to other forest types (conifers, oak, and northern hardwoods). Alternative C with only 392 acres of harvest with regeneration to aspen is much less than Alternative B, however much of the habitat related harvest and natural regeneration would continue to occur adjacent to hunter walking trails. The smaller patch cuts would allow hunters more individual opportunities to pursue game than in Alternative B. The clearcuts with natural regeneration in the Meadow Lake hunter walking trail system would provide an 86 acre, one-time influx of young aspen, as opposed to the patch cutting in Alternative C that would provide less young habitat now, but a more steady supply of it.

The retention and fixing of the unclassified road leading to Bass Lake should reduce the amount of illegal OHV use in the area by keeping it on one road that leads where most of the users appear to want to go. This would lead to less trampling and root damage to the orchids/special plants in the Gilfallen area. However this would eliminate the walk-in/carry-in fishery on Bass Lake, which is one of its desirable points.

3.7.4.1.4– ALTERNATIVE D
Effects are similar to Alternative B, except as follows.

There are fewer harvest activities than in Alternative B or in C, but they would still be apparent in the short-term. This alternative would maintain greater canopy cover in some stands, which would make the harvest less noticeable to the recreation users and defers harvesting in more stands than in Alternative C. In the long-term, existing scenic quality would again return as natural aspen regeneration develops into young stands and diameter growth is realized as a result of thinning pine stands along major travel routes.

Gathering opportunities particularly for blueberries and raspberries would be similar to Alternative C (169 acres of under-burning after thinning and 278 acres of ecosystem burning).

The opportunity for hunting would be maintained near the current level but less than in Alternatives B or C. There is 479 acres of aspen harvesting with 187 acres regenerated to aspen and 292 acres converted to other forest types (conifers, oak, and northern hardwoods). With only 187 acres of aspen regeneration to provide a new age class of

young aspen, which is the favored habitat for some of the more popular game species. All types of clearcutting and shelterwood cutting are reduced from Alternative C including a reduction of 254 acres of aspen harvest in the Meadow Lake trail system.

Andrusia Lake would not get a new parking lot at the boat landing, which would leave this as an area of unsafe parking along the highway.

3.7.4.2 – CUMULATIVE EFFECTS-

Spatial and Temporal frameworks:
Same as for Direct and Indirect Effects.

Past Impacts:
In the last 10 to 20 years, vegetation on the area has been managed for multiple use objectives. There has been 360 acres of tribal land harvested. The Chippewa has harvested 3,408 acres. Thirteen acres of blueberry enhancement is not completed. There has been a decision made in December 2007 that addressed forest access using ORV's across the Chippewa NF including the project area. The cooperative OHV Planning effort has resulted in maps of areas where OHVs are authorized to be used and where they are not allowed. There have been no changes in the use or conditions at Bass Lake or Star Island. Hunting has been the same as it is now. Most other recreational uses on other ownerships did not cumulatively add to those on NFS lands.

Present Impacts:
There are currently 254 acres of active Forest Service timber sales in Kitchi area from past projects. Implementation of the December 2007 ORV decision is currently proceeding.

Future Impacts:
It is expected that trends in management on other ownerships would continue as in the past, with the State and Forest Service contributing much of the harvest activity including both regeneration harvest and thinning in pine. The State may possibly manage 30 acres: 6 acres of aspen clearcut and 24 acres of partial harvest in northern hardwood. Tribal forestry proposes 70 acres of harvest in aspen and pine. There would be a 30 acre conversion to pine. Over the next 3 to 5 years the Ladyslipper Scenic Byway (CR 39, Scenic Highway) would be reconstructed, as reconstruction has started in 2010. None of these activities would significantly affect the enjoyment of recreationists.

The construction of an interpretive site along the byway would benefit the traveling public by allowing them to stop and learn about the Mississippi River and allow them to interact with nature. This is part of the Scenic Highway reconstruction project.

Most other recreational uses on other ownerships would not cumulatively add to those on NFS lands.

3.8 - AIR

3.8.1. - SCOPE OF THE ANALYSIS

Spatial framework:
Air quality is affected by smoke and dust. Dust is a local problem and analyzed within 300 feet of a treated stand or road. Smoke is entirely related to fire so it is analyzed in that resource section.

Timeframe:
This considers work within the last 10 years and the next 5 years; dust has a very short-term effects that last a few minutes as the dust is airborne and until the next rainstorm until it is washed off of plants, but we look at these

minutes or days as well as a few years to see how often these short-term "annoyances" occur. These 10 years covers the time we have data or can reasonably estimate road work.

3.8.3. - EXISTING CONDITION/AFFECTED ENVIRONMENT

Issue:

None of the issues specifically addressed air quality, but it is a resource that needs to be discussed under NEPA as a Topic of Concern.

Topic of Concern: Ground disturbing activities can affect air quality

Indicators:

Amount of activities that disturb the ground and effects from them.

Presently there are no known air quality problems in the KRM EA area.

Dust comes from activities such as road construction, road use, OHV driving, road maintenance, site preparation, recreation projects like parking lot expansions, and gravel pit rehabilitation. This impact is short-term (usually just a few minutes each time) in a given location and dust seldom drifts more than 100 feet, so effects are mainly to the roadside vegetation.

3.8.4 – EFFECTS

3.8.4.1 – DIRECT AND INDIRECT EFFECTS

3.8.4.1.1 – ALTERNATIVE A (NO ACTION)

With no activities, there would be a very minor decrease from the current average amounts of dust from all sources on NFS land and roads.

3.8.4.1.2 – ALTERNATIVE B

There are no known or expected changes from the current average amounts of dust from road maintenance on all ownerships. Alternative B does propose dust-creating activities, but all of these are similar to the types of activities that have been common and on-going in the KRM EA area for decades. There would be road use for harvesting, site preparation, recreation projects, and gravel pit rehabilitation. Road use for timber harvesting is about the same as it has been for the past 2-3 decades, varying year to year; so dust from it is a very minor on-going occurrence.

The temporary road construction, use, and obliteration (about 0.65 miles) has the potential to produce some added dust, but effects would be minimal: short term (5-10 minutes longer than the treatment itself before the dust settles) and for a very short distance (up to 100 feet) from the treated site. Dust from the recreation projects (3 parking lot expansions) and from the gravel pit rehabilitation would be similar to the dust from temporary roads.

3.8.4.1.3 – ALTERNATIVE C (PROPOSED ACTION)

The analysis for Alternative C is the same as for Alternative B, with the same temporary roads and other projects but less harvesting. Thus the "dust" effects would be somewhat less.

3.8.4.1.4 – ALTERNATIVE D

The analysis for Alternative D is the same as for Alternative B, with the same other projects, but only 0.45 miles of temporary roads and less harvesting than Alternative C. Thus the "dust" effects would be less.

3.8.4.2 – CUMULATIVE EFFECTS

Spatial framework and Timeframe:

(Same as for Direct and Indirect Effects.)

Past Impacts:
In the KRM EA area, there has been no known permanent road construction on other ownerships or NFS lands in the last 10 years, only road use and maintenance on all ownerships, plus the reconstruction of part of County Road 22. Thus past impacts to the air from dust have been minimal and are similar to what is described earlier in this EA.

Present Impacts:
There is no known road construction in the KRM EA area on any ownership during the current year, only road use and maintenance, plus the beginning of the reconstruction of County Roads 33 and 39. The road reconstruction would introduce dust along the reconstructed sections and for about 100 to 300 feet on either side with the same effects as in the Direct Effects section. There would be some increase in the fumes from asphalt. Thus, there is not much change in dust from the past. Projects being completed under the Rambling Woods EA would be a continuation of past impacts from timber sale roads and similar to those in KRM EA, so similar effects would continue.

Future Impacts:
There would be the impacts from treatments proposed in this document, plus some local and adjacent projects.

There are no known future road construction or decommissioning projects on NFS lands or on other ownerships of land in the KRM EA area other than the reconstruction of County Roads 33 and 39 in the next 5 years; thus most of the future impacts would come from sites other than the proposals in the KRM EA.

Under Alternative A road maintenance and road use would continue on the same gravel roads as in the past (NFS and other ownership) with minor, short-term dust production, with the reconstruction of the county roads producing most of the dust. Alternative B would add minor amounts of temporary road construction, road use for harvesting, site preparation, and recreation construction project to the dust created by the county road reconstruction and on-going road maintenance and use. Alternative C is similar but with less harvesting would add less dust. Alternative D would add the least. This incremental increase would hardly be noticeable due to the very short timeframes (minutes after a given use or treatment is completed) and small area affected. Dust from harvesting and site preparation is expected to remain relatively constant in future projects.

3.9 - ENVIRONMENTAL JUSTICE

3.9.1. - SCOPE OF THE ANALYSIS

Spatial framework:
The direct and indirect effects analysis for environmental justice considers the treatments and acres proposed with this project because of changes to and impacts on these sites that affect a variety of traditional resources.

Timeframe:
Duration of effects is expected to be 5 to 25 years or less as discussed in Section 3.3 on tradition resources. This allows ample time for understory plants to respond to or recover from treatments. Duration of effects associated with removal of mature trees of interest such as jack pine or older red pine may be 50 or more years until replacement occurs.

3.9.2. - MGMT DIRECTION AND FOREST PLAN CONSISTENCY

Under Executive Order 12898 (PR# 29, 47a, and 129) when populations of low-income persons (below poverty level) or minorities of the county are greater than twice the state percentage for low-income or minority populations or there is expected to be a disparate effects on such populations, an environmental justice assessment must be conducted. In addition to the analysis by county, we have been requested by the Leech Lake Band of Ojibwe to do a similar analysis within the reservation boundary, because it is a separate governmental entity.

Executive Order 12898 on Environmental Justice is intended to focus Federal attention on the environmental and human health conditions in minority communities and low income communities with a goal of achieving environmental justice. Requirements for this project include:

Analyze the environmental effects which includes human health, economic, and social effects, of proposed actions on minority and low-income communities,
Any mitigation established through the analysis process should adequately address, where feasible, adverse environmental effects on minority and low-income communities,
Provide opportunities for community input to the NEPA process, which allows for input on any potential adverse effects and any measures developed to mitigate these effects

3.9.3. - EXISTING CONDITION/AFFECTED ENVIRONMENT

None of the key or non-key issues dealt with environmental justice but it is a resource that needs to be considered in an environmental analysis, so is a topic of concern.

Topic of Concern: Are there disproportionately high and adverse human health or environmental effects of activities on minority and low-income populations?

Indicators:

Amount and types of activities that may have a disproportionate affect on tribal members.

The KRM EA area is split in half between Beltrami and Itasca Counties, with just Cedar Island and the south tip of Star Island in Cass County. No treatments are proposed in the Cass County portion of the project area. Almost the entire KRM EA area is inside the Leech Lake Reservation boundary.

Demographic information indicates that for Beltrami County (21.6% minority and 17.6% poverty) (PR# 44 and 46) and for the reservation (47.5% minority and 21.2% poverty) (PR# 225) an environmental justice analysis is warranted. (Note: all of the statements made for Beltrami County below would apply to Itasca County also.)

3.9.4 – EFFECTS

3.9.4.1 – DIRECT AND INDIRECT EFFECTS

3.9.4.1.1 – ALTERNATIVE A (NO ACTION)

Because there are no treatments proposed, there would be no additional affects on the tribal communities.

3.9.4.1.2 - ALL ACTION ALTERNATIVES

The proposed activities would not result in demographic changes such as displacement of minorities, geographic changes such as land use, or economic hardship such as an increase in taxes. The alternatives would not have negative effects on public health. None of the alternatives would produce hazardous waste or conditions that might adversely affect local populations. With the exception of a short segment of road proposed for closure in two alternatives, access would not change. All the alternatives maintain good access to resources. There are no disparate risks or effects for any given group of people.

There have been numerous opportunities for input on this project. This project was discussed with four Local Indian councils (Cass River, Mission, Sugarbush, and Cass Lake) that are within or adjacent to the project area on 11 occasions and the LLBO Division of Resource Management four times. Details of these meetings are the in project file and in Appendix C for this project. Based on tribal input, Alternative D was developed and modifications were made to Alternatives B and C.

The action alternatives may have beneficial effects such as increased opportunities for firewood and some berry or fruit gathering. Prior to harvesting, opportunities are given to LLBO members to gather balsam fir boughs or paper birch bark from stands proposed for treatment.

There are differences in how the alternatives may potentially affect the availability of traditional resources. What follows is a general discussion that provides some level of context. Effects on tradition resources are detailed in Section 3.3 – Gathering and Traditional uses.

3.9.4.1.3 – ALTERNATIVE B

Alternative B treats more acres with more intensive harvest treatments than the other action alternatives. Of particular concern are the treatments in jack pine, red pine, and sugar maple stands. Jack pine is habitat for some sensitive species and is closely ties to blueberry production. Old red pine stands are of spiritual and cultural importance to the band. Sugar maple stands are important for sugar maple tapping and special plants. Alternative B proposes the most treatments in these stands and the most intensive harvest treatments (clearcutting and coppice harvest), thus having the most potential for ground disturbance, physical impacts to plants, and effects on the abundance and availability of traditional resources.

3.9.4.1.4 – ALTERNATIVE C

There are fewer treatments proposed in Alternative C than in Alternative B. There is no harvesting in jack pine; acres of clearcutting in red pine has been reduced from 351 in Alternative B to 14 acres; and most of the Alternative B clearcut acres were changed to less intensive commercial thinning treatments. In additions, some harvesting in sugar maple stands was dropped although 256 acres are stilled proposed. This alternative proposes 278 acres of prescribed burning to benefit blueberries and other understory plants. Additional treatments were also modified to reduce effects on traditional resources.

3.9.4.1.5 – ALTERNATIVE D

Alternative D is most responsive to tribal input and concerns. There is no harvesting in jack pine. Clearcutting of mature red pine has been reduced to 4 acres with a shift from clearcutting to thinning for most of the other mature red pine stands. Many of the treatments in sugar maple stands were dropped thus reducing harvest to 68 acres. This alternative proposes 278 acres of prescribed burning to benefit blueberries and other understory plants. In addition, treatments in many stands specifically identified by the tribal community for hunting, for gathering, for spiritual or cultural value, or for proximity to their homes or communities were dropped.

3.9.4.2 – CUMULATIVE EFFECTS

Spatial framework and Timeframe:

Same as for Direct and Indirect Effects. Past, present and future activities on NFS lands and tribal lands within the project area included. Although traditional resources may be available on other ownerships they are not considered because these ownerships do not have the same responsibilities to the LLBO that the Forest Service does.

Past Impacts:

There have been 80 acres of harvest on tribal lands in the past decade. Harvest consisted of 40 acre of precommercial thinning and pruning and 40 acres of aspen harvest.

From 2003 to 2009 on NFS lands within the KRM project area there were 3,975 acres of harvesting. About 1,800 acres of regeneration harvest has been completed on NFS lands. Of these, about 1,200 acres have been clearcut and another 560 acres shelterwood harvested. These harvests would potentially result in more impacts to traditionally gathered resources. Management by prescribed burning for blueberry production and protection of or planting of fruiting shrubs would be beneficial to tribal members. There have been no disproportionately high adverse impacts from these activities.

Present Impacts (Current Year):

There is no known harvesting on tribal lands. The Forest Service is finishing 259 acres of harvest. These would not have disproportionately high negative effects on minorities or low-income groups of people in the KRM EA area.

Future Impacts:
Over the next few years the LLBO has plans to clearcut 30 acres and thin 40 acres of pine. (PR# 418a) The Forest Service has no plans for additional timber sales. These activities would not have disproportionately high adverse effects on minorities or low-income groups of people in the KRM EA area, the District, or the Forest.

3.10 - TRANSPORTATION SYSTEM

3.10.1. - SCOPE OF THE ANALYSIS

Spatial Framework:
This documentation looks at the roads within the boundary of the KRM EA area on all ownerships. No new roads analysis was done since the previous 4 EAs that covered this area did one each and recommended transportation system changes. This is primarily a look at the existing condition, since only very minor road changes are proposed in the 4 alternatives.

Timeframe:
It looks at the road system as it exists now (with brief mentions of some activities over the last 10 years) and for the next 5 years, because we are mainly concerned with the existing road system, since no real changes are proposed. All road information comes from the GIS database "prj_roads_cmapper" and the spreadsheet "krm_roads_030210.xls."

3.10.3. - EXISTING CONDITION/AFFECTED ENVIRONMENT

All road information comes from the GIS database "prj_roads_cmapper" and the spreadsheet "krm_roads_030210.xls."

The road inventory for the KRM EA area, was covered by parts of 4 previous "roads analyses" for Rambling Woods, Cass Lake, Winnie, and Sand Plain EAs.

None of the issues (key or non-key) mentioned the transportation system, but it is affected by the KRM EA project, so will be briefly discussed as a topic of concern.

Topic of Concern: Changes to road systems can affect the use of the Forest.
Indicators:
Amount of changes to the road system.
Effects from changes to the road system.

NOTE: There are many aspects of the transportation system that are normally analyzed in an EA, however since there is no proposed road decommissioning and only one road closure proposed in this EA, only the pertinent portions of the system will be mentioned here. The Specialist Report EA (PR# 480) has a much longer and more detailed analysis.

KRM EA area is a very heavily roaded area with at least 3.21 miles of total roads per square mile on total terrestrial land (at least 277.9 miles on the 55,393 acres of total land (86.6 square miles) (out of 81,580 acres of land dropping 26,187 acres of lakes 10 acres and larger)), with well over half of these being non-Forest Service roads (private, Tribal, State, and County Roads). This analysis would only mention total roads on total land, since this is what is used for wildlife analyses. This is based on the GIS map and database, which does not include all of the private road mileages. This high density is because of access needs to the many ownerships of land, past timber activities, the gathering of traditional forest products, and moderate recreational use. This is a heavily populated area, with numerous lakes that are heavily used for recreation. The road density is fairly uniform over the entire area. (There are an addition 18.7 miles of trails in the GIS database making a total of 296.6 miles of "roads" shown there.)

This is an area with "heavy" soils and abundant wetlands, so many of the roads are easily rutted or compacted and some are not drivable except when frozen or very dry. Most of the roads under Forest Service jurisdiction are part of its local road system and were created for timber removal or other forest management purposes (recreation, wildlife habitat treatments), from the 1920s to 1942 and from 1960s to 1990s. Newly built temporary roads are typically short, low standard, for timber harvest purposes only, and decommissioned after use.

Recreation
There is both dispersed recreation and a minor amount of developed recreation in the KRM EA area. Almost everything on the Forest is related to roads, even if it is just accessing the start of a hiking, biking, or OHV trail. Thus a good quality road system is quite important and heavily used.

FR 2091A is a narrow woods road that leads toward Bass Lake. It is supposed to be a closed road due to the Unique Gilfallen Management Area and the walk-in fishery at Bass Lake, however numerous OHVs and pickups drive to the lake on various routes. This is contrary to the Forest Plan and causing damage to the soil, orchids, and TES plants. It is one of the few "road" projects in the KRM EA.

FR 3451 leads to a carry-in canoe landing on the North Turtle River. It currently has ruts and mud holes that make it difficult for cars to access the landing.

LLBO, Traditional Gathering
Native Americans (and other members of the public) rely on roads for gathering of traditional resources and for access to other areas of cultural or spiritual importance. Gathering is typically done near roads where access is easiest. The present road system appears to be adequate for gathering purposes. Gatherers (Leech Lake Band of Ojibwe in particular) want all roads left open, but have not mentioned the need for new roads in the KRM EA area. Even if roads are closed and only opened for management activities, they are still available for foot travel.

Non-native Invasive Species (NNIS) (Non-key Issue)
Roads are the vector for spreading many non-native invasive species, but there is little hard data. There are no known major infestation of noxious weeds in the KRM EA area, but small infestations are common.

Road Density and TES Species
Most of the roads in the KRM EA area are native surfaces (168.1 miles) with 48.9 miles of aggregate surface and only 39.7 miles of paved roads.

Recommended road densities in the Forest Plan are only associated with Canada Lynx management, where 2.0 miles per square mile is the maximum recommended open road density within a Lynx Analysis Unit and the Eastern Timber Wolf where 1 mile per square mile of maintenance levels 3, 4, and 5 are recommended. This will be analyzed in the wildlife section.

During the last 5 years, there have been no known newly constructed permanent roads on NFS lands, only temporary roads associated with sales. The last known system road construction on the Forest was in the early 1990s, with only road reconstruction and temporary road construction since then. (PR# 132)

Road Closures
Based on the GIS database information, the majority of the roads are "open" to public vehicle use or at least mention no closure. There are 21.2 miles of known closed roads. About 6% of the roads (about 15.5 miles) are closed with gates. Other obstructions (e.g. berms, stumps, and boulders) close at least another 5.7 miles (2%) to driving. Thus up to 92% of the roads are open to driving, which is a large part of the area.

Past experience has shown that there may need to be more effective road closure and obliteration on long roads or roads with established use patterns. This includes larger or sturdier barriers with more ripping, covering,

revegetating, or other methods beyond the barrier. This would prevent vehicles from driving if they do get around the main barrier and encourage more rapid reforestation. This includes the road to Bass Lake.

Temporary Roads
With the exception of short temporary roads, all roads required for current management of the area are already in place or were discussed in the past EAs.

Where existing roads do not access lands, temporary roads can be used for management activities. Temporary roads are intended to be constructed and closed or obliterated as needed to reach areas not directly served by "system" roads, and they are not part of the Forest Service transportation system. With the high road density in this area, only about a maximum of 7 temporary roads (about 0.65 miles) are known to be needed.

Temporary roads would be in existing corridor locations where possible, but some would be in new locations. Temporary roads are low standard, normally single lane roads constructed for a specific project such as timber harvest and regeneration, then closed and allowed to revegetate. Roads are normally constructed by bulldozing and perhaps grading. Closure is normally by logging debris or earthen berms. Road obliteration and closure would be accomplished to discourage their eventual use by snowmobiles and other over-the-snow means of transportation. Effective road obliteration prevents a net increase in over-the-snow travel routes.

Timber Management
The forest road system has a very minor affect on the amount of timber offered. However, fewer roads means longer skidding or forwarding distances thus increasing logging costs.

Gravel Pits
There are several very small gravel and sand pits in the KRM EA area, including Turtle River, Buck Lake, and Burns Lake Pits and a small pit off the Big Dip Road. They are accessed by system roads, which are obviously necessary if the pits are to receive further use. All of these were inspected 4-5 years ago and found to be of limited use. All could be closed once the existing materials are hauled out, but only the small pit off the Big Dip Road is recommended for closure in this project.

3.10.4 – EFFECTS
3.10.4.1 – DIRECT AND INDIRECT EFFECTS
3.10.4.1.1 – ALTERNATIVE A (NO ACTION)
Under Alternative A there would be no changes to the transportation system. No roads would be closed, including the Bass Lake road. No new access roads/parking lots would be constructed. The road to the Pimushe Canoe Landing would remain difficult for cars to use. No permanent or temporary roads would be constructed, thus no changes to wetlands, stream crossings, or timber management ability. With no changes to the road system, there would be no changes to the ability to gather traditional resources or do traditional uses of the land. There would be no change in the spread of NNIS. No change in road density means no change in the current effects on TES species. We anticipate a low level of unauthorized OHV use until there are better road closures and better law enforcement. Road densities, gravel pits, and access would not change.

3.10.4.1.2 – ALTERNATIVE B
General
Alternative B proposes the closure of the Bass Lake road, 7 temporary roads (0.65 miles), upgrading the Pimushe Lake canoe access road, and constructing new parking lots for Andrusia, Big, and Winnie Lakes which would entail very short road segments. Other than these minor changes, the transportation system remains unchanged.

Roads in the KRM EA area are adequate and continue to be used for a multitude of uses including recreation, gathering of traditional forest products, timber management, fire management, and property access. With the exception of the short temporary roads and short spurs mentioned in the previous paragraph, all roads required for current management of the NFS lands are already in place.

Recreation
The road system is adequate for the recreation uses in the KRM EA area. There would be no changes to recreational use other than better parking at three boat landings and better access to a canoe landings, plus the closure of the Bass Lake Road. This would make these types of recreation use safer and somewhat more enjoyable. Fishing on Bass Lake would be truly a walk-in fishery as it was intended in the Forest Plan and by the MN DNR.

LLBO, Traditional Gathering
The road system is virtually unchanged, so adequate roads are being maintained for Native American traditional resource gathering and uses.

Non-native Invasive Species (Non-key Issue)
There are virtually no changes to the road system or amounts of use, so would be no change in the amount or speed of NNIS spreading. The temporary roads are very short so would not spread NNIS very far even if they become a vector. These roads would be obliterated and reseeded, so NNIS should be shaded out quickly if they do appear. The closure of the Bass Lake Road would eliminate one place that NNIS could spread.

Road Density and TES species
Road density would not be changed under the KRM EA projects in Alternative B, so there would be no changes in current effects from the transportation system on threatened, endangered, and sensitive species of plants and animals

Road Closures
No new roads are being closed under Alternative B in the KRM EA area. The Bass Lake Road is currently listed as closed on the ground and in the Forest Plan, so this is not a change. It would just be done more effectively.

Temporary Roads
The KRM EA only proposes temporary road construction and subsequent obliteration (7 roads, 0.65 miles).

Timber Management
The forest road system would be the same after the timber sales as it is now, with all temporary roads closed. Some woods roads that receive heavy maintenance before being used may be more open for use and have less vegetation cover than before treatments, but the number and density of roads would not change.

Gravel Pits
There would be one less small gravel/sand pit in the KRM EA area after treatment. This would have little or no effect on local roads because it was only a very minor source of materials for road maintenance.

3.10.4.1.3 – ALTERNATIVE C
The effects to the transportation system under Alternative C would be identical to Alternative B except for the following.

The Bass Lake Road would be fixed to direct traffic on one road leading to the lake rather than the current cross-country travel over a multitude of user developed trails/roads. This would help to protect the orchids and other vegetation in the Gilfallen Area. This would eliminate a walk-in fishery, which is rather uncommon in the general area. This would reduce the sense of solitude at the lake. This is contrary to a guideline in the Forest Plan (G-UB-6 -- "New roads are generally not permitted in these areas.") and may require a Forest Plan amendment. It would provide one more location where NNIS can be spread by vehicles. Depending on how it would be listed on the OHV map, this could provide one new location for ATV/OHVs to drive.

3.10.4.1.4 – ALTERNATIVE D

The effects to the transportation system under Alternative D would be identical to Alternative B except for the following.

There would be no new parking lot at Andrusia Boat Landing so no new access road. Not constructing the Andrusia Boat Landing parking lot would continue the current use of the landing, which is often crowded and requiring parking on the highway.

There would be 5 temporary roads (0.45 miles) rather than 7. The two temporary roads are dropped because the timber sale units they access are deferred in Alternative D. This would result in 2 fewer roads where NNIS could spread and for the potential for erosion or compaction (on about ¼ acre).

3.10.4.2 – CUMULATIVE EFFECTS

Spatial framework and Timeframe:

(Same as for Direct and Indirect Effects.)

Past Impacts:

Within the last 10 years there has been no construction or reconstruction of permanent roads on NFS lands in the KRM EA area other than temporary roads and heavy maintenance of existing roads for the timber sales coming out of the past EAs and some work on county and Indian roads. The work on timber sale roads did not change the quality of the roads or the amount of roaded access to the land. There has been no known new road construction on other ownerships. Past impacts have led to the current road density.

The most noticeable changes to roads occurred on 3 county roads and 2 Tribal roads. County Road 22 is being reconstructed and paved with only about 1.3 miles of the pavement completed to date; County Roads 33 and 39 (Scenic Highway) have been approved for reconstruction and re-pavement. Scenic Highway reconstruction began in the spring of 2010. The Flora Lake road was paved about 5 years ago; and the Chief Boyd Road (listed by various names and numbers) was reconstructed and paved about 2 years ago.

Alternative A maintains the transportation system as it is. Alternatives B, C, and D make only very minor changes to the road system.

Present Impacts:

There have been no known changes to the transportation system on NFS lands or on other ownerships during the last year, other than along County Road 39. Work has just begun on the reconstruction and re-paving of the Scenic Highway, with work in the KRM EA area expected to be done in the summer of 2010.

There has been no change in road density. Alternative A continues this trend. Alternatives B, C, and D continue the trend of no changes to the road system.

Future Impacts:

There are no known future changes to the transportation system within the KRM EA area in the next 5 years on federal or non-federal lands other than those in this project and the proposed reconstruction and re-pavement of County Roads 22, 33, and 39. Depending on funding it is expected that County Road 33 would be completed in the summer of 2010, County Road 39 over the next 3 to 4 years, and County Road 22 some undetermined time in the future. It is probable that there would be a few additional private roads to land and houses as more land is developed in the area. There would be a small amount of logging on State, County, and Leech Lake lands, with access roads that could be permanent or temporary and of unknown lengths.

Alternatives A, B, C, and D add essentially no changes to road density.

3.11 - ECONOMICS

3.11.1. - SCOPE OF THE ANALYSIS

There are two parts to the economic analysis:

The general area, which is dealt with in the cumulative effects section and comes from the Forest Plan revision process.

The specific economic aspects of the proposed treatments.

The economic analysis is for the projects within the KRM EA area that come out of this analysis over the next 13 years for each alternative (year 2011 to 2024). Thirteen years was chosen for estimates of costs and benefits because this is the length of time until the last release of planted trees is completed.

3.11.3. - EXISTING CONDITION/AFFECTED ENVIRONMENT

Issue:

None of the issues specifically addressed economics, but it is a resource that needs to be discussed as a topic of concern.

Topic of Concern: Management activities in the KRM EA project can be expensive.

Indicators:

Costs and benefits from timber harvesting.

Costs and benefits from selected other activities that can be monetarized.

For this analysis, the "QuickSilver Forestry Investment Analysis Program" was used to evaluate commercial timber harvest and related projects. The program incorporates the projected revenue from stumpage as well as the cost associated with harvest preparation, administration of sales, site preparation, reforestation, and timber stand improvement. Other than stumpage, there are no requirements to monetize non-market benefits and a lack of widely accepted standards for doing so. The program was also used for costs of some of the other projects, as best as could be estimated. These numbers reflect the benefits and costs (which could be easily or reliably monetarized) associated with timber harvest, reforestation, habitat improvement, and other projects. The project record contains detailed information about this economic analysis. (PR# 385, 386, and 387)

The program allows for a relative comparison of the alternatives. The economic analysis should be used as a means of comparing the cost/benefits of the commercial timber harvest between alternatives, not as a total analysis of everything within the KRM EA area. There are many assumptions, as shown in the Economic Analysis Narrative (PR# 388), but since the assumptions were applied equally to all alternatives, the results should be relatively proportional. This analysis was based on conservative estimates of timber revenues and generous estimates of costs and numbers of treatments to get the worst-case scenario for outcomes. Quite often when the treatments are performed there are significant differences in timing and costs, however these same differences would be in all action alternatives so would not affect the relative differences between them for analysis purposes.

3.11.4 – EFFECTS

3.11.4.1 – DIRECT AND INDIRECT EFFECTS

In the Specialist Report EA (PR# 480) there are three tables that show different aspects of the economic analysis. Table "c" shows just non-sale/reforestation projects which are primarily costs since the benefits are not easily monetarized, so is not very useful for analysis. Table "a" combines these non-sale/reforestation projects with the sales to give the total estimated costs and benefits for the entire Kitchi EA analysis, which again is not very useful for analysis because the non-sale/reforestation projects do not include many benefits. The real difference in the economic analysis is shown in Table "b" which puts estimated monetary values and timeframes on all of the proposed harvest and reforestation activities under each alternative. This really shows the economic difference between the alternatives and is the most useful way to look at the project.

Table 3.11.4.1.b - Economic Factors - Costs of Sale and Reforestation 2011 To 2024 (PR# 385)

	Alt. A	Alt. B	Alt. C	Alt. D
Volume of Timber Harvested (CCF)	0	36,021 CCF	26,556 CCF	14,679 CCF
Value of Timber Harvested *	0	$1,609,500	$1,125,207	$663,039
Cost of Sale-Associated Cruising, Administration, Temporary Roads, Reforestation, and TSI	0	$2,559,968	$1,531,713	$952,233
Present Net Value **	0	(-$950,468)	(-$406,506)	(-$289,194)
Benefit/Cost	0	0.63	0.73	0.70
Benefit/Cost converted to 2011 timber prices ***	0	0.68	0.79	0.76

* Actual funds generated from the commercial timber harvest would depend on stumpage prices in the year of offer (likely FY 2012, 2013, and 2014). Values were calculated using the base selling price from October 2009.

** Present net value of a series of activities over the next 13 years, depending on the type of activity.

*** Quicksilver was run with 2009 timber prices and 2011 costs. The benefit/cost ratio was updated to 2011 by multiplying by 1.0816. For comparison purposes this is entirely adequate.

3.11.4.1.1 – ALTERNATIVE A (NO ACTION)

None of the dollar value costs or benefits associated with the action alternatives are found in the No Action Alternative, therefore there is no economic analysis for it. It is known that there are costs (and benefits) associated with not actively managing the land, e.g. fire protection and road maintenance, but these are not part of this economic analysis. There are no economic benefits to local workers from jobs created by treatments, e.g. logging, tree planting, or TSI.

3.11.4.1.2 – ALTERNATIVE B

According to the above table, Alternative B has the lowest benefit/cost ratio (0.68) due to high reforestation costs for all of the planting and low revenues with the relatively low timber prices. If only the costs of preparing and administering the sales and building the temporary roads were considered, there would be about a $890,000 profit. However, subsequent planting/natural regeneration is expensive ($120,000 site preparation, $320,000 reforestation, and $80,000 surveys) and the TSI/fuels reduction is very expensive ($1,060,000 TSI and $260,000 fuels) for 492 acres of conifers and 58 acres of natural regeneration.

It must be recognized that there are many non-monetary benefits associated with these projects, including ecosystem restoration, provision of traditionally gathered resources, and improved wildlife habitats. The analysis in the other resource areas shows the relative benefits and costs to resources such as these, in non-dollar terms.

3.11.4.1.3 – ALTERNATIVE C

The discussion for Alternative C is very similar to Alternative B. However, Alternative C has a higher benefit/cost ratio (0.79) due to less planting and site preparation. If only the costs of preparing and administering the sales and building the temporary roads were considered, there would be about a $360,000 profit. However, subsequent planting/natural regeneration is expensive ($30,000 site preparation, $60,000 reforestation, and $50,000 surveys) and the TSI/fuels reduction is very expensive ($440,000 TSI and $180,000 fuels) for 97 acres of conifers and 25 acres of natural regeneration.

3.11.4.1.3 – ALTERNATIVE D

The discussion for Alternative D is very similar to Alternatives B and C. However, Alternative D has a slightly lower benefit/cost ratio (0.76) than Alt. C due to less planting and site preparation, but deferring a relatively high proportion of the harvest units with low costs and high benefits (not planting). If only the costs of preparing and administering the sales and building the temporary roads were considered, there would be about a $190,000 profit. However, subsequent planting/natural regeneration is expensive ($20,000 site preparation, $40,000 reforestation, and $30,000 surveys) and the TSI/fuels reduction is very expensive ($280,000 TSI and $110,000 fuels) for 65 acres of conifers and 25 acres of natural regeneration.

3.11.4.2 – CUMULATIVE EFFECTS

Cumulative effects for economics are best analyzed at the Forest Plan level and only deal with activities on NFS lands. Following is a brief cumulative effects analysis for the project, then excerpts from the Forest Plan EIS analysis that are more appropriate to this resource.

The KRM EA area is a small portion of the Chippewa National Forest and an even smaller portion of the area that is affected economically by activities within the Forest. The KRM project would be providing timber outputs for about 3 to 5 years and contracting opportunities for about 13 years, with most of the benefits or costs found within very small portions of these timeframes. It is only one of about six projects that are active at any given time on the Blackduck District, so it is a very small contributor to the economic health of the economically affected area. Thus the cumulative effects of this project are small. However in total with the stream of projects coming from the Forest, it is important. What is done in the KRM EA area by this project has little or no effect on what would be done on other ownerships in the same general area.

As documented above, Alternative B, C, and D all would implement portions of the Forest Plan and incrementally contribute to the economic factors listed in the analysis in the EIS. Alternative A does not implement the economic factors from the EIS and does not incrementally add monetary values to the local economy.

It is recognized that wood products industry plays an important role in our local economies with regard to providing jobs, sources of income, and sustaining mills. This was analyzed in the Forest Plan EIS and still holds true today. (PR# 72a, Tables EN-2 to ECN-10) In response to industries' request for more wood on the market, the forest is expecting to increase the sell to about 43,000-45,000 MBF in the next few years. This project and others the forest is currently working on would contribute to that volume.

The federal government makes payments to states to cover some of the cost of local government services on tax-exempt National Forest System lands. The states pass those payments on to the counties in which national forests are located. Payments are also made to states amounting to 25 percent of gross receipts from activities on national forests, such as timber sales, mining, special uses, and recreation.

The Economic Analysis from the revision process for the 2004 Forest Plan is found in the EIS Volume I pages 3.9-1 to 3.9-23 and Volume II, Appendix B, pages B-8 to B-11 (PR# 72a). It is incorporated by reference into this document.

This analysis in the Forest Plan incorporated information for other ownerships in general. Due to the broad scale of most economic activities, they are not analyzed at the project scale. Also, they are difficult to analyze at the project scale because data are aggregated at the County level or higher.

3.12 - VISUAL RESOURCES

3.12.1. - SCOPE OF THE ANALYSIS

Spatial framework:

Vegetation treatment effects would be analyzed within KRM EA area on NFS lands where stands are visible from a road, trail, or lake with High or Moderate Scenic Integrity Objective (See Map 3.12.2.b).

Timeframe:

The effects on visual resources would be analyzed for the life of the most visually disruptive portions of the projects (e.g. harvesting and reforestation), which is 5 years until the slash rots and re-growth hides the ground.

3.12.3. - EXISTING CONDITION/AFFECTED ENVIRONMENT

Visual conditions were only briefly mentioned in communications from the LLBO and were not stressed as an issue, however it is a resource that needs to be analyzed for the design and effects of a project for prescriptions.

The most important indicator would be the amount of clearcutting and other regeneration harvesting done in areas of high and moderate SIO, especially where visible from major roads, rivers, or lakes; because these are highly visible treatments. However, other types of treatments in this same area would also be mentioned for comparison.

Topic of Concern: Vegetation Management and Visual Conditions:

Concerns over visual quality and any ground disturbing treatment.

Indicators:

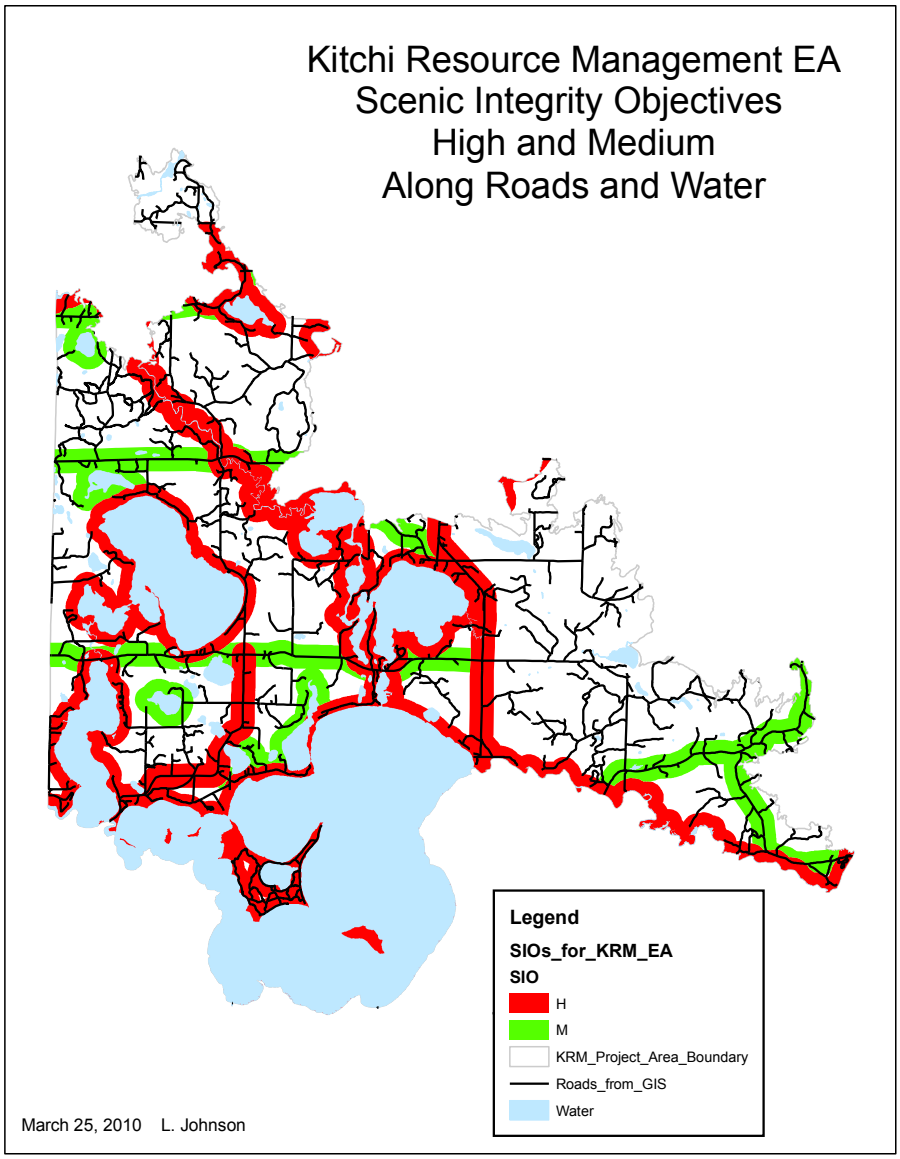
Acreage and number of clearcuts and regeneration harvests visible from High or Moderate SIO travel corridors or use areas.

Acreage and number of other treatments visible from High or Moderate SIO travel corridors or use areas.

Acreage and number of treatments done within High or Moderate SIO travel corridors or use areas (visible or not).

Whether or not the appropriate SIOs are met.

Map 3.12.2.b -- Scenic Integrity Objective Map for Use STRIPS from GIS



The Scenic Integrity Objective (SIO) zones are looked at in two ways. There are ¼ mile wide zones along either side of major travelways and major viewing areas, called STRIPS below (Map 3.12.2.b). There are large areas on the landscape beyond these zones (including the STRIPS), called ZONES below.

The HIGH Scenic Integrity Objective (SIO) STRIP includes ¼ mile wide zones totaling about 16,606 acres along the most scenic and heavily traveled roads in the KRM EA area. The HIGH SIO ZONE (16,662 acres of total land and 6,536 acres NFS land) is just about the same. The HIGH SIO ZONE (and STRIP) encompasses about 20.4% (20.3%) of the total project area (16,662 (16,606) of 81,651 acres) and 21.6% of the NFS lands (6,536 of 30,313 acres). This is about average for the Forest.

The MEDIUM Scenic Integrity Objective (SIO) STRIP includes ¼ mile wide zones totaling about 7,509 (4,372 acres NFS lands) along either side of the medium sensitivity roads and use areas/lakes. Most of the remainder of the KRM EA area is in the MEDIUM SIO ZONE (63,522 acres), which encompasses 77.8% of the total project area (63,522 of 81,651 acres), which is about 20% higher than average on the Forest. The MEDIUM SIO STRIP (7,509 acres) encompasses 9.2% of the total project area (7,509 of 81,651 acres) and 14.4% of the NFS lands (4,372 of 30,313 acres).

The LOW SIO ZONE is 1.8% of the total area (1,467 of 81,651 acres), which is much lower than average on the Forest. It is located only in the northwest corner, north of Big Lake.

Scenic Integrity Objectives (SIOs) were used and considered in the development and design of the proposed action and the subsequent alternatives. All proposed projects would be designed to meet the Forest Plan Standards and Guidelines (PR# 72) as listed in Section 3.12.2 above. (Based on GIS maps.)

In all cases, only treatments that are visible from affected viewpoints (selected roads or lakes) or within the established STRIPS along these viewpoints would be included in the analysis and tables. Stands that are not visible from an affected viewpoint or close to it are not considered to have an effect on the SIO for the normal visitor because they would have to travel cross-country or on low quality roads to see them. It should be noted that in some of the HIGH and MEDIUM STRIPS, stands are visible from viewpoints other than the ones causing the HIGH or MEDIUM designation. Such stands are treated as visible from the other viewpoints.

3.12.4 – EFFECTS
3.12.4.1 – DIRECT AND INDIRECT EFFECTS

3.12.4.1.1 – ALTERNATIVE A (NO ACTION)
No harvesting, reforestation, mechanical site preparation, TSI, or other ground or vegetation disturbing projects are being proposed so there are no impacts to the visual resources from planned activities. Over the next 50 years there would be slow changes in the species composition of many stands as early successional species are replaced by later successional species, e.g. aspen replaced by northern hardwoods. All SIOs would be met for the first 10 years at least.

3.12.4.1.2 – ALTERNATIVE B
The result of the following analysis is that Scenic Integrity Objectives (SIOs) would be met in all of the affected stands, although the activities would be visible. This would be by a combination of boundary design, reserve trees, and specially designed treatments.

Tables in the Specialist Report EA (PR# 480) show more detail about the number and size of affected stands. Only key points are mentioned in the narrative.

Alternative B has numerous harvest units, reforestation units, parking lots, temporary roads, wildlife opening treatments, and other treatments in the HIGH and MEDIUM STRIPS. Unless buffered from the affected roads and

lakes, all of the ground disturbing activities are noticeable for some time after treatment, but the intensity of the visibility can be lessened by the design of the treatment. The most visible and important to highlight here are clearcutting, shelterwood cutting, and ecosystem burning. The regeneration harvesting has effects that are highly visible for at least 5 years and changes the character of the stand for at least 50 years. The burning can cause highly visible charring, scorching, mortality, and changes in the understory that are visible for about 5 years. Other treatments (such as intermediate harvesting, TSI, wildlife opening treatments, and parking lots) are noticeable for a year or two, then revert to pretreatment conditions or begin to blend into their surroundings.

Alternative B has 13 visible harvested stands (388 acres) and 4 other treatments (6 acres), with no burning, in the HIGH STRIP and 21 visible harvested stands (329 acres) and no other treatments, with no burning, in the MEDIUM STRIP. They range from clearcutting with scarification to mowing of openings to parking lots.

In the HIGH STRIP only the 127 acres of clearcutting (4 stands) and Winnie, Andrusia, and Big Lake Boat Landing parking lots would be highly visible, which is only about 2% of the NFS land in the STRIP. One to two year after the treatments, only the clearcutting would still be apparent, due to the lack of trees. The parking lots would have blended into the surrounding landscape again as well as they ever would. With careful design the clearcutting can be made less noticeable and meet the desired SIO, but it would be visible unless it is totally buffered from the travelway.

In the MEDIUM STRIP only the 40 acres of clearcutting (5 stands) and 44 acres of shelterwood cutting (4 stands) would be highly visible, which is only about 2% of the NFS land in the STRIP. One to two years after the treatments, only the clearcutting and shelterwood cutting would still be apparent, due to the lack of trees. With careful design the clearcutting and shelterwood cutting can be made less noticeable and meet the desired SIO, but it would be visible unless it is totally buffered from the travelway.

There are many other similar highly visible treatments along lesser-used gravel roads (MEDIUM SIO ZONE or LOW SIO ZONE). These have to meet less restrictive scenic integrity objectives, which would also be met by proper design.

Over the next 50 years with the same type and level of harvesting, there would be increasing amounts of tree and other vegetation diversity as Forest Plan objectives for stand/tree sizes and age compositions are approached.

3.12.4.1.3 – ALTERNATIVE C

There would be slightly less clearcutting but more prescribed burning than in Alternative B. The result of the following analysis is that Scenic Integrity Objectives (SIOs) would be met in all of the affected stands, although the activities would be visible. This would be by a combination of boundary design, reserve trees, and specially designed treatments.

The analysis and discussion for Alternative C is the same as for Alternative B except:

Alternative C adds 51 acres of prescribed burning in the HIGH STRIP. Which makes this 3% of the STRIP in visible, treated stands on NFS lands. One to two year after the treatments, the burning would also still be apparent, due to the charred vegetation.

It drops 3 stands (28 acres) of harvesting (clearcutting) while adding 5 other treatments (95 acres), which is 95 acres of burning, in the MEDIUM STRIP. One to two year after the treatments, the burning would also still be apparent, due to the charred vegetation.

3.12.4.1.4 – ALTERNATIVE D

Compared to Alternative B there would be no clearcutting and shelterwood cutting, fewer parking lots, but more prescribed burning. Compared to Alternative C there would be no clearcutting and shelterwood cutting, the same prescribed burning, and fewer parking lots. The result of the following analysis is that Scenic Integrity Objectives

(SIOs) would be met in all of the affected stands, although the activities would be visible. This would be by a combination of boundary design, reserve trees, and specially designed treatments.

The analysis and discussion for Alternative D is the same as for Alternative B except:

Alternative D drops 12 visible harvested stands (381 acres) including all clearcutting and shelterwood cutting, drops one boat landing (Andrusia), and adds 51 acres of prescribed burning in the HIGH STRIP. Which makes this 1% of the STRIP in visible, treated stands on NFS lands. One to two year after the treatments, the burning would still be apparent, due to the charred vegetation.

It drops 11 visible harvested stands (186 acres) of harvesting (including 5 clearcut/shelterwood cuts (48 acres)) while adding 5 other treatments (95 acres), which is 95 acres of burning, in the MEDIUM STRIP. One to two year after the treatments, the burning would also still be apparent, due to the charred vegetation.

3.12.4.2 – CUMULATIVE EFFECTS
Spatial framework and Timeframe:
(Same as for Direct and Indirect Effects.) Plus treatments on other ownerships would be looked at.

Past Impacts:
Within the last 10 years there has been timber regeneration cutting, thinning, riparian planting, wildlife opening planting, and TSI done or planned in some of the HIGH and MEDIUM SIO STRIPs from the Rambling Woods and Cass Lake EAs (and other previous NEPA documents). During the last 10 years in the HIGH SIO STRIP there have been 15 visible clearcuts (136 acres) and in the MEDIUM SIO STRIP there were 15 visible clearcuts (123 acres). This is roughly similar to the proposed regeneration harvests in Alternatives B and C; so the visual effects from the Kitchi EA proposals would be roughly a continuation of the past conditions. Alternative D has less regeneration harvest so less effects. Alternative A has no regeneration harvest so no effects. Residual trees and strategic shaping of the harvested units conceals most of the impacts. These cuts are so recent that revegetation has not returned large shrubs or saplings to the areas so they are still quite visible, but not obtrusive. Slash has been treated or is hidden by regrowth and is not very visible. Recently there has been an increase in the number of reserve trees and leaving legacy patches, making harvest units less noticeable than previously. There have been a few harvest cuts on other ownerships, but they are not visible from the HIGH or MEDIUM SIO STRIPS, so do not add in cumulatively. The timber structure is changed in these stands, but it does not appear unnatural to viewers who were not familiar with the area or stands before they were cut.

Regeneration harvesting has been done on other ownerships in these visible strips over the last decades also, but to an even smaller percentage than on NFS lands, so this adds a minor amount of visual disturbance to the area. What it really does is make future harvesting less noticeable because it blends in with past cutting.

Present Impacts:
Within the last year there has been timber regeneration in two stands (45 acres) on NFS lands that are visible from the roads in the MEDIUM STRIP. Residual trees and strategic shaping of the harvested units would conceal most of the impacts. There is one known clearcut visible on State land in the HIGH SIO STRIP. The timber structure was be changed in these stands, but it does not appear unnatural to viewers who were not familiar with the area or stands before they were cut. The area is so large that the cutting is on only a tiny portion.

Future Impacts:
There would be some cutting on other ownerships along these roads or lakes in the next 5 years, but unknown amount or location, since information from them is not always site specific. It is expected that trends in management/harvesting on other ownerships would continue as in the past. They do not have to meet the same visual quality management restrictions as we do, but the results are usually visually acceptable, based on past experience. All cutting has short-term impacts on visual conditions. This same amounts and types of harvesting as in the action alternatives is expected to continue to be implemented in projects on NFS lands on the Forest over the next 5 years and again in the KRM EA area in future decades. Our management on NFS lands in this EA and

future EAs that implement the Forest Plan would make a more even distribution of age-classes of timber, leading to some changes in visual conditions, toward a slightly younger average age.

Over the next 50 years, there would be increasing amounts of diversity on National Forest system lands as Forest Plan objectives for stand/tree sizes and age compositions are approached. Large, long-lived conifers would increase in density and size.

3.13 - CULTURAL RESOURCES

3.13.1. - SCOPE OF THE ANALYSIS

Spatial Framework:

The stands proposed for treatment within the project boundary were used for this analysis. Cultural resources are analyzed within treated units because this is where effects would be seen and impacts to cultural resource sites can occur.

Timeframe:

This considers work within the last 24 years and the next 5 years. The last 24 years was used because this about how long we have been doing structured cultural resource surveys, so we have good data on impacts to this resource and the next 5 because that is roughly the longest time that any ground disturbing activities would be occurring.

3.13.3. - EXISTING CONDITION/AFFECTED ENVIRONMENT

Issue: None of the issues specifically addressed cultural resources but it is a resource that needs to be considered as a topic of concern.

Topic of Concern: Ground disturbing activities can affect heritage resources.

Indicators:

Amount of activities that are close to known sites.

Effects on heritage resources from ground-disturbing activities.

The general KRM EA area contains numerous cultural resource sites resulting from human settlement and other activities over the last 10,000 years. These include camping sites, villages, special activity areas such as wild rice processing sites, cemeteries, and sites of spiritual and traditional use. There is also evidence of a wide range of later historic activities ranging from the fur trade up to and including Forest Service administrative sites, which are still in use today. Common late historic sites include those associated with mineral exploration, settlement, logging, fur trapping, resorts, and recreational dwellings such as cabins.

The Kitchi study area is almost entirely within the exterior boundaries of the Leech Lake Reservation. Lands and resources both within and outside the Leech Lake Reservation boundary are very important to Indian people for subsistence gathering, for the collection of plants for medicines, for spiritual and ceremonial purposes, and, in general, for living and being Indian. Maintaining the health, availability, and access to these resources is of vital concern to those involved in traditional practices. Any Agency proposals that manipulate, change, or alter forest resources may prevent or alter Indian people's ability to gather and utilize valuable and potentially scarce resources (e.g. quality birch bark, blueberries, medicinal plants). Some Tribal issues may be resolved or mitigated when Indian people are informed of management activities prior to implementation. Forest Service managers are aware of the sensitivity of the issue to Indian people, and work collaboratively with local Indian communities and Reservation officers prior to making any decisions that may be perceived by the public as denying access to the land.

The KRM EA area has been occupied for at least the last 9,000 by various densities of people. Their main impacts on the landscape were fire-related, with periodic "prescribed" burning. The larger populations of the last several

centuries prior to the arrival of Europeans created greater impact within the ecosystems than previous occupations. Through treaty and federal legislation most of the ancestral lands of the Ojibwe people were ceded and opened to logging, farming, and permanent settlement by Euro-Americans in the late 19th century. This era of increased use, settlement, and fire suppression forever changed the character of the area in a number of ways (less white pine, decline in fire dependent pine forests, increase in hardwoods, balsam fir, and shrubs). The practice of temporarily damming waterways to provide flow for floating logs during the early pine logging also altered both terrestrial and aquatic habitats within the watersheds.

Although much of the land within the KRM EA project area has been surveyed to some extent for evidence of heritage sites (by use of historic records and field examination), the inventory is far from complete as it has been focused on planned project areas only. Only a small portion of the known heritage sites have been subject to more extensive evaluation of their eligibility for the National Register of Historic Places. Most often, known cultural resource sites are simply excluded from the project area. Sites include earliest periods of human occupation down to the industrial logging period, homesteading, and more recent Ojibwe occupation.

There are known cultural resource sites in the KRM EA area. Recent and past surveys have located 61 sites in the KRM EA area, affecting 60 stands that have any type of proposal in any of the action alternatives. This is about 90.6 acres of affected proposed stands. They would be protected from any affects to them. All stands proposed for treatment have received surveys to identify cultural resource sites or would have surveys before treatments are done. If sites are found, the stands would either be dropped from treatment or the site areas would be avoided by treatments. (NOTE: Heritage resource sites are protected from FOIA and are not shown in the project record in order to protect sensitive resources from damage and vandalism. The effects analysis pulled general information from the surveys in order to show the potential effects from treatments, but does not list any information that could be located on the ground.)

3.13.4 – EFFECTS
3.13.4.1 – DIRECT AND INDIRECT EFFECTS
3.13.4.1.1 – ALTERNATIVE A (NO ACTION)
Under the no action alternative, no ground disturbing activities such as timber harvesting would occur. This alternative would have no new effects to cultural resources eligible for listing on the National Register of Historic Places.

3.13.4.1.2 – ALTERNATIVE B
Alternative B would have a very minor or no impact on the cultural resources on treated acres. It would result in the loss of about 90.6 acres of treatments in pieces of 60 stands that would need to be partially or totally deleted from the units (affecting 34 harvested stands (72.4 acres), 4 riparian planting stands (5.4 acres), 20 wildlife openings (9.7 acres), and a road and parking lot (3.1 acres)). These pieces of stands were not eliminated from the acreages of the stands in the rest of the analysis in this EA. It is assumed that small parts of all stands are lost during the on-the-ground design, so this is not unexpected. All known cultural resource sites would be "protected by avoidance" from proposed timber harvesting; and either by avoidance or by not disturbing the soil in other potentially ground-disturbing activities. There would be no new effects on archeological sites that may be eligible for listing on the National Register of Historic Places. An indirect effect to archeological sites may be increased site visibility and access, which may increase unauthorized artifact collecting and vandalism. If any sites are found during treatments, the work would stop and the site would be subsequently avoided. Any new sites found during project implementation would be recorded and protected in consultation with SHPO and THPO, as appropriate.

3.13.4.1.3 – ALTERNATIVE C
The discussion for Alternative C is the same as for Alternative B except only 58 stands are affected by known sites (90.3 acres). This drops 2 harvested stands.

3.13.4.1.4 – ALTERNATIVE D
The discussion for Alternative D is the same as for Alternative B except only 38 stands are affected by known sites (41.4 acres). This drops 20 harvested stands (48.3 acres) and 2 wildlife openings (0.9 acres).

3.13.4.2 – CUMULATIVE EFFECTS

Spatial framework and Timeframe:
(Same as for Direct and Indirect Effects.) Plus treatments on other ownerships would be looked at.

Past Impacts:
In the last 24 years on NFS lands in KRM EA area any known cultural resource sites within planned activity areas have been surveyed, marked, and avoided. Within the last 10 years there have been small timber sales on NFS lands, but none within these treated units. Cultural resource surveys were done for all soil-disturbing projects, so there have been no known effects to cultural sites. Similar projects have been done on other ownerships. They do surveys as required by their regulations. The combination of forest activities such as timber harvesting and recreation activities may have had cumulative effects on cultural resources in the form of increased soil erosion, visitor traffic, vandalism, and alteration of historic landscapes, but if it has, it is minimal and has not been noted. Cumulative impacts of these types are difficult to quantify, but have been avoided or minimized through the exclusion of sites from project activity areas. This mitigation appears to be effective, since there are no known documented negative impacts on cultural resources sites from our projects on the District. We do not know of any activities on other ownerships that have affected cultural sites on NFS lands. Treatments in the KRM project would continue this protection.

Present Impacts (current year):
Presently there are very few soil-disturbing projects. Again, surveys have been done so no known impacts.

Future Impacts:
There would continue to be soil-disturbing projects on all ownerships, but again, surveys would be done according to regulations, so sites would be protected. The Forest Service has no plans for more timber sales in the next 10 years in the KRM EA area, so no sites beyond those in the KRM EA area would have the possibility of being impacted by our treatments.

Alternative A would not have further incremental effects, since there are no ground disturbing activities. Alternatives B, C, and D are part of and add incrementally to these other activities. Activities on other ownerships are unlikely to impact the stands treated in KRM EA area since machinery operation is normally confined to the treated stands. Based on past experiences, it is likely that there would be no impacts to cultural resource sites from the combination of activities on all ownerships in the KRM EA area, the District, or the Forest.

3.14 - SOIL

3.14.1 – SCOPE OF ANALYSIS

Spatial Framework
The bounds of this analysis are the stand boundaries within the Kitchi Project Area boundaries. Potential direct and indirect effects of soil erosion, soil compaction, rutting, prescribed fire, and nutrient loss are reasonably confined to the soil directly beneath where the disturbance factors are taking place. This is due to the relatively short slope lengths and the natural revegetation of exposed soil over the majority of a site. The main focus of this report would be on the terrestrial soils. See the Water Quality Section (3.4) for discussions of wetlands, streams, and lakes.

Timeline
In terms of most soil effects the time frame would be five years in the future and five years in the past. However with compaction the time frame is indeterminate. In general, the length of time a soil remains compacted corresponds with the amount of compaction that has occurred (Jaakko Poyry, 1994) (PR# 27).

3.14.3 – EXISTING CONDITION

The effect of the Kitchi Resource Project on the soil is not a key issue or a non-key issue as identified in Section 1.6. However, soil erosion, compaction, and rutting, nutrients in sandy soils, miles of roads, and fire intensity are soil resource issues important to examine as topics of concern, with the following indicators:

Topic of Concern: Treatments can affect soils in various ways.

Erosion: Amount of exposed soil, from all treatments including burning.
Compaction: Amount of rutting, amount of area in landings and skid trails.
Low nutrient soils: Amount of treatments on low nutrient soils. Mitigation used.
Severely burned soil: Amount of area under prescribed burns or burned piles - heat effects.

Soil Erosion:

Erosion hazard is the inherent susceptibility of a soil to erosive forces such as raindrop impact or water flow over the surface. Steep slopes are areas most prone to soil erosion. Direct effects would be potential soil erosion and displacement. The sheet and rill erosion hazard for the Kitchi area harvest units is rated as low to moderate. But within the harvest units there are areas of steep slopes. Burning, especially severely burned soil, can expose mineral soil that would then be susceptible to soil erosion.

Soil Compaction:

Compaction is a rather complex process. The degree and extent of it depends on the harvesting system used, site conditions during operation, and soil texture. If the soil does become compacted there are varying reports about how long it would take for the effects of compaction to recover to pre-harvest levels (Jaakko Poyry, 1994) (PR# 27). Recovery periods varied from a few years to several decades. In general, the rate of recovery was proportional to the degree of compaction.

Texture is a factor in compaction and should be taken into consideration when entering a stand with heavy equipment. Since soils that are wet are more prone to compaction (McNabb, et al, 2001) (PR# 57aab), the somewhat poorly to very poorly drained soils are soils of concern for this analysis. Roads are also a major source of concern for compaction. After logging is completed, the temporary roads would be decommissioned and not open for motorized vehicles. Wet areas would need to be crossed during frozen soil conditions. Small inclusions of wet soils should also be avoided.

Nutrient Retention:

Leaving coarse and fine woody debris is important to maintain long-term soil productivity. Leaving coarse woody debris of varying sizes would be preferable. Particular attention should be given to harvest units that would be clearcut and where the soils have relatively low nutrient status (See Table 3.14.3.b). Scarification or mechanical brush piling should limit the displacement of the topsoil. Mixing of mineral and organic soil materials is not considered detrimental displacement" (USFS, 2002) (PR# 72c).

Prescribed Fire:

The effect of prescribed fire depends on the severity of the burn. In a low to moderate burn the effects are thought to be of short term in duration. A severe burn can have effects on soil of longer duration. According to the forest soils section in the Generic Environmental Impact Statement (GEIS) on Timber Harvesting and Forest Management in Minnesota (Jaakko Poyry, 1994) (PR# 27), there is a volatilization of some nitrogen and phosphorous during the burning process. On the other hand, many of the nutrients that do remain are transformed to a state that is more available for plant growth. Plant growth is typically greater after a low to moderate burn and the increased plant growth would eventually contribute to an increased nutrient base. Furthermore, there is evidence that there could be more nitrogen fixing plants after a fire. According to the Minnesota GEIS, unless prescribed burns are carried out under extremely dry conditions and are associated with piling and windrowing of slash, they are of little long-term consequence to the nutrient economy of Minnesota's forests (Jaakko Poyry, 1994) (PR# 27). Slash that has been piled and burned would severely burn the soil under the piles, but the area to be burned is small. (See Section 3.15 on Noxious Weeds also.) (Effects of exposed mineral soil are discussed under soil erosion.)

Landtype Associations
There are three Landtype Associations (LTAs) in the analysis area. The majority of the proposed stands in the project area are in the Bemidji sand plain (Bsp), Blackduck stagnation moraine (Bsm) and the Blackduck till plain (Btp). These LTAs are broken down into landtypes and these landtypes are further subdivided into phases (also known as Terrestrial Ecological Units). Tables and maps about the soils, too lengthy and large to be included in this document, can be found in the project record. Treatment units often contain multiple phases or ecological landtypes (ELTs). Lists and acreages of all the phases and ELTs for each of the activity stands would be available in the project record, as well as other soil descriptors.

In general the LTAs and smaller breakdowns determine the plants that would naturally grow on a site, which includes a general idea of the groupings of forest types that should be managed on each site. For analysis purposes, the critical items are three factors (drainage, slope, and nutrients) as shown under "Soils of Concern".

Soils of Concern
There are three soil types that are a concern in this analysis area. (See Table 3.14.3.b).

Table 3.14.3.b -- Soils of Concern - Kitchi Activity Area

Type	Alternative B	Alternative C	Alternative D
Somewhat poorly to very poorly drained	215 acres	243 acres	169 acres
Steep soils	184 acres	178 acres	117 acres
Low nutrient soils	1,554 acres	1,651 acres	1,554 acres

* Based on ELT mapping from the 1970s not the more detailed phase level mapping of the 1990s to present, so some of this may not qualify as low nutrient soils.

Soils with a high water table – very poorly drained, poorly drained, and somewhat poorly drained soils. These soils are more susceptible to compaction and rutting since they remain wet most or all of the time. Compaction of the soil can affect the productivity of the site (Jaakko Poyry, 1994) (PR# 27). Compaction can be mitigated by harvesting when the soil is frozen. There are activity stands in the Kitchi area that have wet soil types

Steep slopes – The concern is the potential for soil erosion if the mineral soil is exposed. Soil erosion can result in a loss of nutrients at the site, which in turn, affects plant growth. This can be mitigated by avoiding these slopes with heavy equipment or by avoiding a continuous downhill path for water to channel. If that cannot be avoided, water bars and slash should be applied to the trail to reduce the potential for soil erosion. Within the stands are areas of steeper slopes with potential for soil erosion. Some of the activity area has soil with the potential for soil erosion to occur.

Low nutrient soils – These are excessively well-drained deep sands that are lower in nutrients compared to other soil types on the Forest. Leaving slash, which contains nutrients, at the site would mitigate this effect. (see G WS-10, Forest Plan, 2004) (PR# 72)

3.14.4 – EFFECTS
3.14.4.1 – DIRECT AND INDIRECT EFFECTS
Details of design features and mitigating measures that need to be followed for soil protection and to meet the effects in this analysis are found in Appendix H.

3.14.4.1.1 – ALTERNATIVE A (NO ACTION)
No further effects on the soil, beyond the existing condition, would occur. No further accelerated disturbance would occur, whether compaction, displacement, or erosion at whatever rate beyond existing condition, due to no proposed management activities.

3.14.4.1.2 – ALTERNATIVE C (PROPOSED ACTION) and ALTERNATIVES B and D

Soil Erosion:

According to the ecological classification system, there are 184 acres in Alternative B, 178 acres in Alternative C, and 117 acres in Alternative D that have steep slopes (see Table 3.14.3.b). Although there are chances for erosion to occur, implementation of design features identified in Appendix H relating to erosion, would result in no substantial effects relating to erosion in Alternatives B, C and D. If the mitigations are followed, the transport of sediments would be minimal and not beyond the treatment boundaries.

Soil Compaction:

There are 215 acres of somewhat poorly to very poorly drained soil types in Alternatives B, 243 acres in Alternative C, and 169 acres in Alternative D. However, if harvesting were done during the proper time of year, the effects would be minimal. In terms of compaction, if mechanical site preparation is done within the recommended soil moisture conditions, the effects would be minimal. Alternative B has the most risk of compaction from site preparation with 572 acres treated, Alternative C has 145 acres and Alternative D has 96 acres.

There are chances for erosion and rutting on roads to occur in all the action alternatives. There would be 7 segments of temporary road construction under Alternatives B and C totaling approximately 7/10 of an acre of disturbance. There would be about 5 temporary road segments totaling about one-half acre for Alternative D. The amount of compaction and rutting would vary depending on the soil texture, moisture and the amount of use the road receives. If the road crosses poorly drained soil and if the road is designed properly and the mitigation measures, such as operating on frozen ground, are followed, the effects should be minimal. After the harvest-related activities are completed the same roads would be decommissioned by blocking any further use so the effects would be the same. In this project system road construction or reconstruction is not proposed, however we would maintain or accomplish necessary maintenance to provide adequate access for proposed management activities. This would be a positive effect in terms of fixing existing drainage structures and reducing soil erosion occurring on these roads.

Although there are chances for compaction to occur, implementation of mitigations identified in Appendix H, Voluntary Site-Level Forest Management Guidelines referenced in the Forest Plan, and Forest Plan standards and guidelines relating to compaction (Section 3.14.2), would result in no substantial effects relating to compaction of soils from treatments or on temporary roads for Alternative B, C and D.

Nutrient retention:

Most of the stands with predominant soil types that have low-nutrient soils maintain the conifer type so the tree types utilizing the lower nutrient levels are on the proper site. Stands that are not being regenerated to conifers were regenerated to aspen due to the concern over the cost of conversion to pine or difficulty in accessing the stands for heavy equipment in the non-frozen times of the year. The total amount of acres of low-nutrient sandy soils is up to 1,554 acres for Alternatives B and D and up to 1,651 acres for Alternative C (see Table 3.14.3.b). Furthermore, there is 189 acres of low-nutrient soil that is being clearcut and allowed to regenerate back to aspen or birch in Alternative B, 138 acres in Alternative C, and 107 acres in Alternative D. Stands planned for site preparation or fuel reduction should leave as much slash as possible while achieving the objective.

Although there are chances for nutrient loss to occur, implementation of mitigations identified in Appendix H relating to nutrient retention, so the potential for activities in Alternatives B, C, and D to impact long-term soil productivity in the project area is low.

Prescribed fire:

Alternative B has 43 acres of prescribed burning (ecosystem burning and underburning) while Alternatives C and D have 447 acres planned for prescribed burning. Most of this is fuels reduction burning after harvesting or understory ecosystem burning, so is rather low intensity to the soils and would have little effect beyond the chance for erosion as discussed earlier. Furthermore, there are no steep soils in the treatment areas.

Pile burning is planned on small acreages, so if conditions are favorable there is a chance the soil beneath the burned piles would be severely burned. The total stand area is 95 acres for Alternative B, 28 acres for Alternative C and 18 acres for Alternative D, but the combined burned area is small, less than 5% of the stand area. (See Section 3.15 on Noxious Weeds also.)

3.14.4.2 – CUMULATIVE EFFECTS

Scope of Analysis: Same as for direct and indirect effects, plus the other ownerships.

Past Impacts:

Soil monitoring of forest stands in Minnesota conducted by the Minnesota Dept. of Natural Resources (MN DNR 2002, 2004, PR# 57a and 71ba) in 2000 and 2001 has shown that 1.8% to 2.5% of harvest areas were devoted to log landings and forest roads. From 2004 to 2006, the Forest Service in Minnesota kept their infrastructure to less than 3% on 75% of the sites monitored. Limiting the log landing and forest roads has limited the amount of heavily compacted soil in harvest units.

One of the concerns the monitoring program encountered was a lack of erosion control practices on roads with slopes. However, the report did find that operators used more erosion control practices on skid trails. The report did not distinguish between ownership, so it is difficult to tell how the Forest Service did in comparison with other ownerships. In one Chippewa National Forest monitoring report from 1999 and two reports in 2001, protection from soil erosion on roads and main skid trails was found to be good. Reviewing the Chippewa National Forest Monitoring Reports from 2004 to 2007, found 2 sites out of 15 had a small amount of erosion reported on skid trails. Recent 2008 monitoring, which was focused on soil erosion, also found erosion to be minimal on skid trails on the sites sampled (PR# 73, 122, 145, 192, and 239ee, CNF Monitoring Reports, 2004 to 2008). In most cases the soil monitoring has followed 2004 Forest Plan guidelines and in cases where they have not, the impacts have been minimal and limited to the stand itself and have not gone beyond the stand boundaries.

While there have been other timber sales and actions in the recent past in the project area on NFS lands and on other ownerships, they do not overlap the proposed treatment units therefore their effects are not additive or cumulative.

Present and Future Impacts:

There are no present or reasonably foreseeable future actions that would occur within the cumulative effects analysis area that would affect soil productivity or wetlands. While there are other timber sales and actions in the project area on NFS lands or on other ownerships, they do not overlap the proposed treatment units in the KRM EA project and since soil is not moving beyond the treatment boundaries, their effects are not additive or cumulative.

Alternative A would have no cumulative effects related to soil compaction, rutting, erosion, or nutrient removal because no harvesting or prescribed burning is planned within this alternative.

Logger education about proper harvesting techniques to limit damage to the soil, Forest Certification, and monitoring efforts should continue into the future. These efforts should help to reduce soil resource impacts.

3.15 - NON-NATIVE, INVASIVE SPECIES (NNIS)

3.15.1. - SCOPE OF THE ANALYSIS

Spatial Framework:

Treated stands within the KRM EA area on NFS lands and the access ways to them, since this is where we can impact NNIS and disturbance is where they tend to appear, with mention of effects on other ownerships where such effects are known.

Timeframe:
This considers work within the last 10 years and the next 5 years, with general mentioning of longer timeframes to set the stage for where we are now. Past 10 years because this is where we can relate what has been done with known locations of NNIS and the next 5 years because that is the time in which most of our ground-disturbing activities would occur.

3.15.3. - EXISTING CONDITION/AFFECTED ENVIRONMENT

One former key issue mentioned NNIS. At the time of public scoping there were NNIP control projects in the KRM EA proposed action. They were since deferred, so NNIP activities are of less impact in the EA now and the key issue is now a non-key issue.

Non-Key Issue: Management activities can spread non-native invasive plants.

Indicators

Design features implemented to minimize the spread of NNIS.

There is a concern that proposed management activities could introduce or spread non-native invasive species (NNIS) in the project area by bringing infested equipment into the project site, by moving equipment through infested areas, or by heavily disturbing the ground. Under the KRM EA we are primarily concerned with timber harvesting where weed seeds and parts of plants can be brought in on equipment as it moves from infested stands, as it enters a stand through an infested ditch or roadways, or as it treats stands adjacent to infested ditches. Other treatments with the potential for new NNIS infestations are those where the ground is exposed as in new parking lots or on temporary roads. The NNIS are also commonly spread by OHVs and in material from gravel pits. These are the most common methods by which the NNIS are usually spread. Whether new infestations of noxious weed populations become permanent on the landscape would be determined by the management strategies undertaken and by the nature and amount of ground disturbance.

We will analyze primarily spotted knapweed and common tansy since they are the most common ones in the KRM EA area and are easily spread by all of the above methods.

Non-native invasive species have become an increasing problem over the years over the whole country and the whole district. KRM EA area is no different. Left uncontrolled under the right conditions they crowd out native species and change entire ecosystems. There are scattered patches of non-native invasive species (NNIS) in the KRM EA area with several known site that have been treated in the past. Spotted knapweed and tansy are primarily known along County Road 20, the Third River Road, and at Star Island Campground. Originally we had planned on treating about 29 acres of NNIS in the KRM EA project, mechanically or by hand in and near the ditches along CR 20 and the Third River Road, plus at the dispersed campsite on Star Island. When the Forest-wide NNIS Control EA became a current project, it was felt better to let that EA cover all future projects rather than piecemeal them. Thus in KRM EA we are only going to look at effects from NNIS that are associated with proposed treatments.

3.15.4 – DIRECT AND INDIRECT EFFECTS

3.15.4.1 – ALTERNATIVE A (NO ACTION)

There are no treatments, so NNIS would not be spread more than under present conditions, which is minimal in this area.

3.15.4.2 – ALTERNATIVE B

Under Alternative B NNIS could be spread into timber sale units (2,959 acres), 3 new parking lots, and 7 temporary roads. There are 18 stands along CR 20 and the Third River Road that must be entered through the potentially infested ditches, be entered on small woods roads through these ditches, or involve harvesting directly adjacent to these ditches. All of these increase the chance of NNIS being spread to new adjacent sites. Removing the infestations on the entry points would be the greatest factor in minimizing the potential for spread. Use of the

following design features should minimize this probability, no matter how many treated stands are involved. Due to the number of treated stands, Alternative B has the greatest probability of new infestations.

Indicator 1: Design features implemented to minimize the spread of NNIS.
There are three design features that could minimize the spread of NNIS from infested locations to new sites. A standard timber sale clause can be used for equipment: "Cleaning machinery before moving from infested sites to non-infested sites" (Clause BT 6.35). This would remove most seeds and parts of plants. Where the access to a stand is through a known site of tansy or spotted knapweed, the NNIS should be removed before entering the site. This is a known factor along County Road 20 and the Third River Road. When soil needs to be added to a site, as in parking lot construction or temporary road construction, use non-infested gravel/borrow material.

3.15.4.3 – ALTERNATIVE C
Under Alternative C there are fewer treated sites than in Alternative B, so somewhat less potential for new infestations of NNIS. About 278 fewer acres of timber sale units (2,581 acres), but the same new parking lots and temporary roads. Alternative C has the medium probability of new infestations. Under Alternative C there are 2 fewer locations (16) than Alternative B that must be entered through the potentially infested ditches, be entered on small woods roads through these ditches, or involve harvesting directly adjacent to these ditches. So a slightly lower potential for new infestations.

3.15.4.4 – ALTERNATIVE D
Under Alternative D there are fewer treated sites than in Alternatives B or C, so less potential for new infestations of NNIS. About 1,035 fewer acres of timber sale units (1,546 acres) than Alternative C, one fewer parking lot, and two fewer temporary roads. Alternative D has the lowest probability of new infestations among the action alternatives. Under Alternative D there are 9 fewer locations (7) than Alternative C that must be entered through the potentially infested ditches, be entered on small woods roads through these ditches, or involve harvesting directly adjacent to these ditches. So a much lower potential for new infestations.

3.15.5 – CUMULATIVE EFFECTS for NNIS
Spatial framework and Timeframe:
(Same as for Direct and Indirect Effects.) Plus treatments on other ownerships would be looked at.

Past Impacts:
There have been ground disturbing activities on NFS lands and on other ownerships periodically over the last 10 years, with infestations of NNIS that have resulted from them, such as NNIS weeds in old slash piles, along old roads, and in log landings. Alternatives B, C, and D would have similar ground-disturbing activities, but with proper design features and prescriptions, NNIS invasion should be minimal or non-existent.

Present Impacts (current year):
The last harvesting from the timber sales in the Rambling Woods EA on NFS lands in the KRM EA area are being completed this year. There are also active State and County sales. Effects are expected to be the same as in the past.

Future Impacts:
There would continue to be ground disturbing activities on other ownerships periodically in the next 5 years along with the KRM EA timber sales and other activities; which would all have the potential to spread NNIS. A Forest-wide EA is being prepared for the control of NNIS, so there will be active control efforts for NNIS in addition to the measures discussed in this EA. We know of no NNIS treatments being done on other ownerships either in conjunction with harvesting or as stand-alone projects. We have little control over what happens on other ownerships, but we must ensure that we do not spread any infestations from them to NFS lands because of road construction and use of temporary roads to remove timber products.

NNIS would continue to spread in the project area under all alternatives as a result of present and reasonably foreseeable actions on Forest Service and non-Forest Service lands; although Alternative A would spread them the least since it has no new ground disturbing activities on Forest Service lands.

3.16 - Regional Forester Sensitive Plant Species

3.16.1. - SCOPE OF THE ANALYSIS

Spatial Framework:

The project area as defined for this document is the aggregated landscape ecosystem area units that include proposed timber harvest, silvicultural treatments and other activities of the Kitchi Environmental Assessment. It includes the treated stands in which the activities are noticeable and where they affect the ground and vegetation

Timeframe:

Effects are analyzed for 5 years past and 5 years in the future, because effects on plants are relatively immediate.

3.16.2. - MGMT DIRECTION AND FOREST PLAN CONSISTENCY

The Biological Evaluation of effects of the Kitchi Vegetation Management Project on populations of plant species (PR# 433) on the Regional Forester's Sensitive Species list (hereafter known as sensitive plants) contains more detailed information about the plants. This is a summary.

No consultation with US Fish and Wildlife Service or Biological Assessment was required because no proposed or listed threatened or endangered plant species are known or thought likely to be present on the Chippewa National Forest.

3.16.3. - EXISTING CONDITION/AFFECTED ENVIRONMENT

There is one non-key issue based on public comments and internal discussion that is related to sensitive plants and their habitat and a Topic of Concern that expands on the non-key issue.

Harvest activities may negatively impact habitat for red shoulder hawk, goshawk and other sensitive species.

Indicators:

Effects to TES and their habitats. (This applies to all TES and RFSS and habitats with various indicators listed later.)

Topic of Concern: In addition to the non-key issue, there are effects on species that must be analyzed to be sure we concur with the Forest Plan and protect TES and RFSS (including vegetation treatments other than harvesting).

Indicators:

Effects to TES and RFSS and their habitats. (This applies to all TES and RFSS and habitats with various indicators listed later.)

Surveys or screening for all 19 Regional Forester Sensitive Plant Species are done on all stands proposed for treatment. Because it would be impractical to survey every potential stand for sensitive plants, there is a screening process that removes stands where sensitive plants are unlikely to occur. Stands are selected for survey based on the habitat requirements and phenology (timing of life cycle events) of each sensitive plant species. Stand composition is derived from the CNF GIS library stands layer. Species or stands are screened out or in based on many factors including age of stands, proximity to likely habitat, and forest types. The number and intensity of surveys depends on when species are visible and how easy they are to distinguish from similar species. There are three survey seasons June, July/August, and September, with May for 2 specific species. The intent of these criteria are to avoid conducting surveys in stands where they are not necessary.

Surveys were conducted by persons with knowledge of the habitats and of the species, with the intensity related to the possible risks associated with the project, the species involved, and the level of knowledge at hand.

Survey results cannot lead to a conclusion that a species is NOT present in a stand. It is possible to miss positive detections during a survey. Additionally, some species may not emerge in a given year or for years (e.g. *B. mormo*), so even a very thorough survey may miss colonies. A survey can lead to a conclusion that a species IS present in a stand; or it can contribute to a risk assessment that the species is likely not present.

The risk assessment for each species that follows the screening or survey is based on two factors: the Consequence of Adverse Effect from a Particular Activity and the Likelihood of Adverse Effect from a Particular Activity.

3.16.4 – EFFECTS

3.16.4.1 -- Summary

Based on an analysis of the treatments, there would be no adverse effects on **known populations** of Regional Forester's Sensitive Plants (RFSS). Adverse effects on **habitat** for RFSS are likely to be caused by timber harvest, site treatments, temporary road construction, and expansion of parking facilities.

Alternatives B, C, and D are not in compliance with Forest Plan Standard WF-7 for protection of *Botrychium mormo* **habitat**, although no known **populations** of *Botrychium mormo* would be adversely affected. (There are from one to seven stands with suitable habitat but no known surveyed populations being harvested in these alternatives). (Due to the complexity of the computer analyses, it was not possible to drop or modify these stands for the analysis in this EA at the late date in which this was determined, however before the decision notice is signed all of this suitable habitat will be deferred from harvesting.) (See Table 2.1.7.g and 3.16.4.2.b)

Table 3.16.4.1.a -- Viability Determinations for RFSS

Common Name	Determination
Small triangle moonwort	May affect*
Little goblin moonwort	Likely to result in a trend to federal listing or loss of viability unless the 8 affected stands are deferred from harvesting in the Decision Notice.
Bluntlobe grapefern	May affect*
Pale botrychium	May affect*
Ternate grapefern	May affect*
Little grapefern	May affect*
Fairy slipper	May affect*
Ram's-head lady's slipper	May affect*
Goldie's woodfern	May affect*
Bright green spikerush	No effect
Fewflower spikerush	No effect
White fawnlily	May affect*
Scented oakfern	No effect
White Adder's-mouth	May affect*
Oneflowered broomrape	No effect
Small green wood orchid	No effect
Clustered bur-reed	No effect
Waterawlwort	No effect
Canada yew	May affect*

*Full text of determination reads: "May affect individuals but not likely to cause loss of viability in the planning area or contribute to Federal listing."

3.16.4.2 -- Species Risk Assessments

The project proposes timber harvest, fuels reduction, thinning, site preparation for regeneration, conversion and maintenance of wildlife openings, construction of temporary roads, and expansion of recreational facilities

including parking lots. These activities may have direct and indirect adverse effects on survival and recruitment of sensitive plant species and adverse effects on their habitats including:

Direct crushing and covering of plants leading to mortality.
Opening of the canopy increasing light penetration, leading to soil and plant desiccation and release of competing understory plants.
Alteration of soil conditions through compaction, burial, and mixing of soil horizons, particularly from activities of mechanized harvest and skidding equipment.
Changing hydrological conditions leading to mortality from inundation or desiccation of plants

Because all known populations of sensitive plants are protected by at least a 250 foot "no activity" zone, no direct effects on known populations of sensitive plants are expected.

Since crews cannot identify every individual of a sensitive species on a project of this size, effects to habitat can be used to evaluate and compare effects of alternatives. Alternatives would vary in potential effects to habitat equivalent to the differences in acreage as shown in the descriptions of alternatives and in summary tables elsewhere. Alternative B affects 2,854 acres, C affects 2,580 acres, and D affects 1,515 acres. The breakdown by Terrestrial Ecological Unit (TEU) is shown in the Specialist Report EA (PR# 480). Harvest would result in decline of habitat value for most sensitive species until the treated stands return to a mature state.

The Biological Evaluation (PR# 433) includes an environmental baseline outlining features of the species' biology and habitat relevant to proposed activities followed by a risk assessment where direct and indirect effects are examined to determine the level of consequence and level of likelihood that sensitive plants would be impacted due to project activities. The EA only contains the risk assessment since that is what the decision maker needs to evaluate.

Small triangle moonwort
Botrychium lanceolatum var. angustisegmentum
Because harvest activities would occur on northern hardwood ecosystems, but no known locations of the plant would be directly or indirectly affected by the proposed action; the fact that this plant is sometimes found in disturbed areas; and all likely harvest areas were surveyed with proper timing and intensity; likelihood of effects is moderate and consequence of effects to this species are low.

Little goblin moonwort, goblin fern
Botrychium mormo
While Alternative B would not affect known *populations* because they are protected by a 250 foot buffer and/or 70% crown closure in the stands, it would cause adverse effects to goblin fern *habitat*. Alternative B calls for harvest activities such as coppice cut, stand clearcutting, shelterwood, patch clearcutting, and single tree selection in eight stands that are good BOMO habitat. The single tree selection can meet the BOMO protection criteria, so only seven of the stands are detrimental to the plant. The prescriptions as analyzed in the EA are less detrimental. Alternatives B and C avoid suitable habitat by deferring parts of 4 of these stands. Alternative D defers or avoids suitable habitat in 6 of the stands. In actuality, none of this habitat would be treated as discussed in Section 3.16.4.1. See Tables 2.1.7.g and 2.1.7.h for more details about stands in BOMO habitat.

In summary there are 16 stands with harvest prescriptions in suitable BOMO habitat. Of these five would be deferred in all alternatives, 2 would be modified or deferred to protect suitable habitat, and nine would be harvested because the treatment would leave at least 70% crown closure or the areas are severely "wormed" so the habitat is not suitable. This is shown in Table 3.16.4.2.b in the Specialist Report EA (PR# 480).

Risk Assessment for Goblin Fern
Because this species cannot survive in disturbed open sites; invasive worms are also causing widespread habitat loss in the CNF; and the proposed action would adversely affect 181 acres of habitat, risk and consequences of

adverse effects are high. If the 7 stands (or parts of stands) are deferred from harvesting, then the likelihood and consequences are moderate.

Bluntlobe grapfern
Botrychium oneidense
Likelihood and consequence of adverse effects are low because vernal pools and other wetlands have some protections in Forest Plan standards and guidelines and this species has not been found in any stands proposed for harvest.

Pale botrychium
Botrychium pallidum
Its habitat is extremely variable, occurring mostly in open areas, but sometimes where shaded. Many of the habitats have regular disturbance regimes. The largest threat to the species may be natural succession toward shaded, forest environments. Disturbance seems to be a consistent trend. (PR# 69e, Chadde and Kudray 2003b)

Likelihood of effects is moderate because activities such as skidding and hauling logs could damage habitat. Consequences of effects are low because ground disturbing activities could be doing as much good as harm to this species.

Ternate botrychium
Botrychium rugulosum
Habitat includes fields, clearings and young forests. (PR# 346g, WI 2010)

The preference of *B. rugulosum* for open habitats and openings within forests suggests that it may be adapted to exploit certain habitats in early successional communities (PR# 346b, MN 2010). Habitat alteration is a primary and continuing threat to the perpetuation of this species in the state (PR# 346b, MN 2010).

A review of aerial photography shows most known occurrences of Ternate botrychium on the CNF are on roadsides, abandoned roads, and other disturbed areas. No occurrences have been found within the project area but a high probability exists that they are there somewhere, and a lower probability exists that some could be affected. Likelihood of effects is moderate because activities such as skidding and hauling logs could damage habitat. Consequences of effects are low because ground disturbing activities could be doing as much good as harm to this species.

Little grapefern
Botrychium simplex
Potential threats are not well understood; disturbance may stimulate plant establishment in some habitats. Natural plant succession may be a threat in open habitats, but no information is available on the response of *B. simplex* to site changes (PR# 69f, Chadde and Kudray 2003c).

Because this species is adapted to a wide range of habitats and disturbance regimes, likelihood of adverse effects is low. Because the species is relatively widespread compared to other sensitive *Botrychium* species, consequences of adverse effects are low.

Fairyslipper
Calypso bulbosa
Habitat references indicate a preference for old growth habitats with canopy closures greater than 60%, so any impact that increases canopy openings can be a threat.

There are 54 known occurrences of fairyslipper on the CNF. Three are in the project area, one of which is in close proximity to a stand (1-88-115) proposed for a coppice cut. This stand is proposed to be deferred from harvesting due to *B. mormo*, so this would eliminate effects to the fairyslipper also.

Harvest activities would occur in pine stands proximate to northern white cedar. One known population would be adversely affected unless mitigations are implemented. Probability of adverse affects is high without the mitigation. Since this is one of the more common sensitive species, consequences are low-moderate.

Ram's-head ladyslipper
Cypripedium arietinum
Threats to the viability of *Cypripedium arietinum* include habitat loss or alteration, mechanical damage, competition, and collecting. Timber production activities and associated ground disturbance are major threats, as orchids are intolerant of increased sunlight. It appears to prefer the mid-successional forest formed from old disturbance such as wind throw or possibly fire. Here then, lack of appropriate management may be a threat as forest succession shades it out.

Ram's-head habitat in wet areas can be altered by any change in drainage patterns due to human and beaver activities.

Poaching as well as legal collection of wild orchids is perhaps the biggest threat next to habitat loss. In areas with high white tail deer numbers browsing can be significant.

Since habitat is variable but difficult to predict, likelihood of adverse effects is moderate. Since no locations of this showy plant were found in proposed harvest stands, consequences of effects are moderate.

Goldie's woodfern
Dryopteris goldiana
In all but the wettest habitats, even-aged regeneration harvest can reduce canopy closure enough to reduce moisture levels critical to this species. Whether thinning or uneven aged harvests would alter habitat conditions enough to impact populations is uncertain.

Likelihood of effects is high because extensive areas of mesic northern hardwood types currently with an overstory of aspen would be coppice treated to emphasize aspen regeneration and Goldie's woodfern is not adapted to high disturbance regimes. This is mitigated by the lack of any known individuals in treated stands and the size of the plant should make it conspicuous and its evergreen habit would make it visible at any time surveys were conducted. Consequences of adverse effects are moderate because affected individuals are part of a disjunct population.

Bright green spikerush and Fewflower spikerush
Eleocharis olivacea and E. quinqueflora
Activities would not occur within habitat for these species. Likelihood and consequence of effects are low.

White fawn lily, White trout lily
Erythronium albidum
Assuming the lake effect limiting it to habitat near large lakes, most of the project area is not suitable habitat. No occurrences were found in stands proposed for treatment so risk of adverse effects is low. Consequence of adverse effects is moderate due to its relative rarity on the Chippewa NF and threats due to earthworms and garlic mustard.

Scented oakfern, Limestone oak fern
Gymnocarpium robertianum
Harvest activities may encroach on cedar swamp edges; but no harvest activities are planned on cedar swamps, so likelihood and consequence of adverse effects are low.

White adder's-mouth
Malaxis brachypoda
One location of *Malaxis brachypoda* is known at the edge stand 01-88-155 near the transition to a cedar swamp. This population would be protected by a 250 foot buffer.

Risk Assessment for White adder's-mouth:
Harvest activities may encroach on cedar swamp edges; but no harvest activities are planned on cedar swamps, so likelihood and consequence of adverse effects are low.

Oneflowered broomrape
Orobanche uniflora
One flowered broomrape is an inconspicuous parasitic plant known from only one location on the Chippewa NF. That location is a brushy utility right of way. This is a disjunct population far from other locations in Minnesota. It has a wide host range (PR# 7a, Gleason and Cronquist 1963). Habitat includes moist woods, thickets, streambanks, and roadsides (PR# 178a, Rudikoff 2008), suggesting a broad habitat range. It can be very inconspicuous, capable of completing its life cycle without emerging from the soil duff layer.

Risk Assessment for Oneflowered broomrape:
Any analysis of risks for this species is confounded by the disjunct nature of the one known population, the fact that it is growing on a disturbed area, its inconspicuous growth habit, and the lack of information in the literature on the species' habitat.

Since it has not been found in the project area likelihood of adverse effects is low. Because the one known location for Oneflowered broomrape is on a utility right of way consequences of adverse effects are low.

Small green wood orchid, club-spur orchid
Platanthera clavellata
No harvest activities are planned on black spruce and tamarack swamps so likelihood and consequence of adverse effects are low.

Clustered bur-reed
Sparganium glomeratum
Habitat includes wet forest, marsh, small rivers and streams, and littoral zone of lakes.

Likelihood and consequence of adverse effects on the known population and potential habitat in project area are low.

Waterawlwort
Subularia aquatica
Proposed actions would not affect lake margins so likelihood of risk is none.

Canada yew
Taxus canadensis
Likelihood of adverse effects is low because this species is easily spotted in surveys at any point in the field season, and it was not found in any surveys of treated stands. Consequence of effects is low because this species is relatively common on the Chippewa NF.

3.16.5 – CUMULATIVE EFFECTS for NNIS

Spatial framework and Timeframe:
(Same as for Direct and Indirect Effects.) Plus treatments on other ownerships would be looked at.

Past Impacts:
Northern Minnesota on all ownerships of land has been subject to extensive and repeated timber harvest for the past hundred years. Systematic data on historical effects of timber harvest on rare plant species is not available. Contradictory hypotheses can be made about these past effects. On one hand, if these species are present in an area that has been subjected to one, two, or more harvest rotations then it is possible to conclude that these populations

can withstand disturbance, most likely by occupying unharvested habitat then recolonizing stands after harvest. On the other hand, declines in abundance may have occurred and much of the literature points to timber harvest as a primary or secondary threat to most species that are found in forested habitats.

Forest Plan Standards and Guidelines do not exclude timber harvest around or near sensitive plant species except for goblin fern. In the Kitchi project, and other projects of this type, sensitive species are generally protected by a 250 foot buffer area (no-activity area) and other protections are assigned on a case-by-case basis in the process of scoping the project plan. Other Forest Plan Standards and Guidelines and Management Area Objectives aimed at protection of other resources such as soil, fisheries, and wildlife provide protections to sensitive plant populations as well. Assuming these protections are kept in place in the future, risk of cumulative effects to sensitive plants is low. Other ownerships of land have their own methods of dealing with sensitive plants. On private lands, they probably don't even know they exist or give any protection. Other governmental lands receive surveys to the appropriate extent and protection to their required amounts.

Alternative A would lessen the average amount of disturbance on the landscape; while Alternatives B, C, and D would continue past similar ground-disturbing activities in varying degrees.

Present Impacts (current year):
The last harvesting from the timber sales in the Rambling Woods EA on NFS lands in the KRM EA area is being completed this year. There are also active State and County sales. Effects are expected to be the same as in the past. As described under Past Impacts, known sites of RFSS plants have been protected as directed by each agencies guidelines.

For NFS lands, surveys are conducted in stands proposed for treatment, but usually not in adjacent stands. There may also be existing known sites from surveys done in past years for other activities. Since most effects to RFSS plants are direct effects from the treatments at the known sites of the plants, what we do has little effect on adjacent ownerships and what they do has little effect on plants on NFS lands.

Future Impacts:
There would continue to be ground disturbing activities on other ownerships periodically in the next 5 years along with the KRM EA timber sales and other activities; which would all have the potential to affect RFSS plants. As described under Past Impacts, known sites of RFSS plants would continue to be protected as directed by each agencies guidelines.

For NFS lands, surveys are conducted in stands proposed for treatment, but usually not in adjacent stands. There may also be existing known sites from surveys done in past years for other activities. Since most effects to RFSS plants are direct effects from the treatments at the known sites of the plants, what we do has little effect on adjacent ownerships and what they do has little effect on plants on NFS lands.

3.17 - OTHER ITEMS FOR THE FONSI

3.17.1. - SCOPE OF THE ANALYSIS

The FONSI that is the end result of an EA requires that several items be declared non-significant. Most of these are parts of the discussions of the previous resources. Following are statements and analyses that cover the remainder of the items that do not logically fit previously

3.17.4 – EFFECTS

Ten areas are considered for significance:

1. Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect would be beneficial. (All effects to selected resources are covered in previous analysis. There are no other known effects that need to be discussed.)

2. The degree to which the proposed action affects public health or safety. (Covered in previous analysis.)
3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas. (Historic and cultural resources have been surveyed and discussed previously. Wetlands are very common in the KRM EA area, and have been discussed previously. There are no park lands, prime farmlands, wild and scenic rivers, or ecologically critical areas in the KRM EA area.)
4. The degree to which the effects on the quality of the human environment are likely to be highly controversial. (Covered in previous analysis. As "controversy" is defined under the law and regulations, this does not apply to the KRM EA.)
5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks. (Covered in previous analysis. As defined under the law and regulations, there is not uncertainty or risk in the KRM EA.)
6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration. (None of the actions cause us to do similar actions or connected actions in the future.)
7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts. (Covered in previous analysis in the cumulative effects sections as well as elsewhere.)
8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources. (Covered in previous analysis.)
9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973. (Covered in previous analysis.)
10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment. (No such violations are known. Covered in previous analysis.)

CHAPTER 4 - CONSULTATION AND COORDINATION

4.1 - ID TEAM MEMBERS:

Name	Location	Expertise or Position	Sections of Analysis Completed
Leo Johnson	Blackduck RD	NEPA Coordinator, Integrated Resource Analyst	Transportation, Air, Economics, Environmental Justice, Visual, Heritage Resources, Gathering, NNIS, FONSI, Chapters 1, 2, and 4 and Appendices
Linda Burke	Blackduck RD	Forester	Vegetation, Prescriptions
Gary Swanson	Supervisor's Office	Silviculturist	Prescriptions
Cory Mlodik	Blackduck RD	Wildlife Biologist	Wildlife
Tom Heutte	Supervisor's Office	Botanist	RFFS Plant analysis
Carl Crawford	Blackduck RD	Fire Planner	Fire Management/Fuels/Smoke
Jim Barott	Supervisor's Office	Soil Scientist	Soils
Eric Reittenan	Deer River RD	Fisheries Biologist	Fisheries
Luke Rutten	Supervisor's Office	Hydrologist	Water Quality
Patti Hines	Blackduck RD	Supervisory Recreation Technician	Recreation
Nancy Salminen	Blackduck RD	Recreation	Recreation
Andrea LeVasseur	Supervisor's Office	Archaeologist	Heritage Resources - Input/data
Jan Geerdes	Blackduck RD	GIS	GIS maps and other products
Greg Morris	Blackduck RD	District Ranger	Advice, Coordination

4.2 - CONTACTS:

The Forest Service consulted the following individuals; Federal, State, and local agencies; tribes; and non-Forest Service persons during the development of this environmental assessment. More specifics are listed in Appendix A.

4.2.1 - FEDERAL, STATE, AND LOCAL AGENCIES:

MN DNR, US Army Corps of Engineers, USDI BIA, MN Pollution Control Agency, Beltrami County SWCD, Beltrami County officials, Cass County officials, Itasca County Officials, USDI Fish & Wildlife Service, Forest Service Offices, Mississippi Headwaters Board, SHPO, some town officials, and some township officials.

4.2.2 - TRIBES:

Division of Resource Management (DRM), 13 Local Indian Councils (LIC) to varying degrees, the Natural Resource Advisory Council, THPO, and other Tribal officials.

4.2.3 - OTHERS:

Environmental groups, timber industry groups, resource management groups, Bemidji Pioneer, Blackduck American, and interested private citizens.

APPENDIX A - MAIL LIST FOR SCOPING

PR# 286a and 288a contains the names of the groups and individuals who received the letter and either a long attachment describing the project or a summary of the project. It is also in the Specialist Report EA (PR# 480). Due to length, it is not included here in the EA.

APPENDIX A-1 - MAIL LIST FOR PUBLIC COMMENT PERIOD

(This is the list of people that get the EA (PR# 490). All LIC members would get a letter informing them of the availability of the EA through their chairmen (PR# 495).)

This is in the Specialist Report EA (PR# 480). It is not included here in the EA due to length.

APPENDIX B - LITERATURE CITED

This is in the Specialist Report EA (PR# 480). It is not included here in the EA due to length.

APPENDIX C. RESPONSE TO SCOPING AND BEFORE (KRM EA)

This appendix contains all comments from the public that were obtained due to asking about the Kitchi Resource Management EA, arranged chronologically. This project has been mentioned at least briefly in LIC meetings since 2007.

Most of the public comments in Appendix C are direct quotations from the letters or e-mails. The only portions of public comments that are left out of the following write-ups are sentences or paragraphs that do not contain information that would be useful in the discussion or analysis of the project or its effects.

For comments that cannot be fully answered here there is a reference in the Forest Service Reply to the portion of the EA where the comment is answered or discussed.

NOTE: There could be some confusion about the alternatives mentioned in the following comments, because the names were reused after making many changes, as described in Section 2.1.7 of the EA. Therefore, any reference to a specific alternative in this Appendix C refers to the current alternatives in the EA, unless it specifically has a note saying that the alternative is "(as in the scoping letter)" or "as scoped".

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1. Craig Engwall (MN DNR) - e-mail - 10/23/2006 (PR# 119)

1.1 Mail:

Craig Engwall, MN DNR in Grand Rapids, requested that he receive mailings of all NEPA correspondence and documents; so he can provide input.

(Forest Service Reply: This will be done.)

2. Leech Lake Band of Ojibwe (DRM) - email - 09/19 and 20/2007 (PR# 155 and 156)

2.1 Information for DRM/IDT Meeting:

None

(Forest Service Reply: We sent LLBO DRM shapefiles for the upcoming meeting in both e-mail and CD formats.)

2a. Leech Lake Band of Ojibwe (DRM) - meeting notes - 11/07/2007 (PR# 160)

2a.1 Data:

Check RELEVE Data for ideas of what is in the stands. There are quite a few plots in these two areas.

(Forest Service Reply: This will be checked by the soil scientist.)

2a.2 Riparian:

Riparian planting of white pine in aspen stands is a good idea.

(Forest Service Reply: This is one of the proposals in the KRM EA project.)

2a.3 Lowland Conifers and Hardwoods:

Need to enhance the riparian areas with increased lowland conifers. LLBO opposes most harvesting in lowland conifers because it is not enhancing these stands.

Regeneration of lowland conifers is still being questioned. Check nearby stands to see if the stands regenerated adequately and if it persisted into sapling and larger sizes. There are a lot of sensitive species living in lowland conifer stands, so shouldn't disturb them without good reason and if you harvest, you must get back a fully functioning ecosystem, not just a stand of trees. Stan added later that even winter harvesting can hurt orchids

and similar plants due to compaction of snow and deeper freezing. May need more intensive surveys to find the plants and protect them.

Before cutting in black ash stands consider the potential impacts from the Emerald Ash Borer. Should we save all the trees in case a few of them are resistant?

(Forest Service Reply: Few treatments in lowland hardwoods or conifers are proposed in the KRM EA. Black ash harvests will be designed in consideration of the emerald ash borer.)

2a.4 Earthworms:

Need to consider the impacts of earthworms and climate change in our management. What will it do to species we manage? How to manage in anticipation of it. Prescriptions should be designed as insurance against it by having a lot of diversity. Earthworms have been discussed by Cindy Hale and Jim Barott. Deer exacerbate the problems with worms. Apparently MCEA has focused on this and may bring it up.

(Forest Service Reply: This will be considered, as necessary, in the analysis.)

2a.5 Wildlife Openings:

Wildlife openings should not be managed in northern hardwood stands. They are okay in pine stands but there are probably natural ones there. Planting white pine in unwanted wildlife openings is good, but with the number of deer present, it may be futile. May be better to plant a mixture of conifers and fruiting shrubs.

(Forest Service Reply: We will propose converting wildlife openings to forest types in appropriate locations, e.g. northern hardwood stands; and will consider all appropriate tree species and fruiting shrubs.)

2a.6 Trust:

They have a problem with our shifting of analysis boundaries. To them it looks like we cut all we could in an area, then shifted boundaries so we could re-compute percentages and cut more. (In reality what happened is that we shifted from watershed boundaries to LE boundaries.) They think that a 5-year re-entry is too soon (and we agree). Need to check all of the past projects to be sure we don't "negate" anything we decided before. The projects that Steve listed for us to check were:

Bluestem EA
County Road 328 Salvage Project (We cannot figure out what this one is)
Meadow Lake Timber Sale (part of Rambling Woods EA) (This is included in the CDRM and KRM NFMA documents to see if any projects from the past were overlooked.
2000 Conifer Thin (Red Pine/White spruce Conifer Thinning)
Pennington Jack Pine Forest Health (Forest Health Thinning EA) (The EA included mainly things that are still similar to the 2004 Forest Plan, so they would be analyzed in the KRM EA also.)
Between Two Rivers (Two Rivers EA)
TRW
Winnie North (This was a vegetation EA with analysis similar to the 2004 EA for vegetation, TES, and other resources. There were no stands designated for uses that would interfere with the current analysis.)
(Forest Service Reply: As will be discussed elsewhere, boundaries do change with revised Forest Plans and changes in analysis tools. The above sales will be considered in cumulative effects, primarily in the aggregation of age and forest type classes.)

2a.7 Sugarbush:

Sugarbush was mentioned but not discussed at length.

(Forest Service Reply: This will be considered in our choice of stands and prescriptions.)

2a.8 Large Patches:

Large and mature forest patches were mentioned but not discussed at length.

(Forest Service Reply: This will be analyzed in the EA.)

2a.9 Meadow Lake Hunter Walking Trail:

Meadow Lake HWT is no problem.

(Forest Service Reply: Okay.)

2a.10 Carter Lake Hunter Walking Trail:

Tower HWT has too much young aspen, so why stress more aspen regeneration? Somewhere along it there is a private lock and gate blocking the road

(Forest Service Reply: This will be considered in our development of the project.)

2a.11 Star Island:

Treatments on Star Island are questionable. Were island rights reserved in Cass Lake and Leech Lake under past treaties (Nelson and Morris)? Any timber sales on Star Island would be opposed. People who have homes on the island should protect themselves with FIREWISE, not rely on Forest Service timber sales to reduce fuel loadings.

(Forest Service Reply: This will be considered in our development of the project.)

2a.12 Traditional Areas:

Grandpa's Point has a traditional use history with the LLBO. Apparently "Bug" School had a special use permit for a camp (Lisa remembers working on it). The area has been a traditional campsite for fishing, being right at the junction of Lake Winnibigoshish and the Mississippi River. The road leading to it supposedly is gated for an eagle nest. Could they use the alternate route from the north not from the northwest? (No, this one is impacted by a different eagle nest.) ((Why don't we just leave the gate open for traditional use or let LLBO close it when they need to for TCP use? The roads may have predated the nest, the same as the campground road, so we might get by with not closing it?) Would this be a good site for a fishing pier? This was brought up by us and not really stressed by LLBO.

(Forest Service Reply: This will be considered in the development of the project or the analysis.)

3. Mission LIC - meeting - 6/16/2008 (PR# 192a)

3.1 Meeting:

None

(Forest Service Reply: We went to the meeting, but the meeting was not held. We were not informed of a cancellation.)

4. Greg Snyder - telephone - 07/07/2008 (PR# 194aa)

4.1 Mailing List:

He wants to be on our NEPA mailing list for the Continental Divide Project.

(Forest Service Reply: Since he asked to be on one project, he will be added to it for all projects.)

5. Sugarbush LIC - meeting - 08/11/2008 (PR# 199d)

5.1 Non-Native Invasive Species Control:

They had questions about NNIS that do not now apply to KRM EA.

(Forest Service Reply: This was included in the comments and responses until we decided to drop all Non-native Invasive Species projects from the Kitchi EA and let them be handled by the Forestwide NNIP Management EA. So this comment response is dropped.)

5.2 Harvest Money:

I was asked several times why the stumpage money does not go to the Leech Lake members.

(Forest Service Reply: We have compiled the following historical information. (PR# 184 (with 257 label on it)):

The short answer is that the United States paid the Ojibwe $1,490,195.58 for the land and timber in 1923. The long, detailed answer follows.

The 1889 Nelson Act (For the Relief and Civilization of the Chippewa Indians in the State of Minnesota) attempted to break up the communal land ownership orientation and concentrate the Ojibwe at White Earth reservation through the allotment system created two years earlier by the General Allotment (aka Dawes) Act. In the allotment system, individual Ojibwe were given private ownership of land parcels, usually 160 acres. The Nelson Act provided for the cessation of all reservations except White Earth and Red Lake, after Ojibwe took allotments either at White Earth or on their existing reservation, and remaining lands had been sold at auction (if pine lands) or opened to settlement (if agricultural land). The Nelson Act was never fully implemented, as most Ojibwe did not move to White Earth. Allotments were also taken at Leech Lake, and pine and agricultural lands were sold within the reservation. (However, in 1971 the courts confirmed that Leech Lake Reservation had never actually been disestablished, but that's another story.).

Problems implementing the Nelson Act and concern about the sale of the rich pine lands that were supposed to be sold off created a controversy over management of the area. The State Federation of Women's Clubs and other groups launched a campaign to create a Park or Forest Reserve out of these lands. The 1902 Morris Act represented a compromise between logging and conservation groups. It put supervision of logging under the Forester of the Department of Agriculture, provided that lands so logged were ever after to be part of a Forest Reserve. It reserved the Ten Sections area from sale or settlement, reserved areas of Indian land (as well as allotments), and opened agricultural land for settlement. It also provided for the sale of pine timber (reserving 5%), and the proceeds were "for the benefit of the Indians" and to be paid to the designated officer of the Indian Department.

Continued controversy over management of the Forest Reserve resulted in the passage of the Act of May 23, 1908. This created the Minnesota National Forest under the direction of the brand new US Forest Service. The Act modified the boundaries set in 1902, mainly opening up lands on the west and south. It also provided that the Indian allotments within the boundaries of the National Forest could be sold to the government or exchanged for allotments outside the Forest and the land relinquished would become part of the National Forest. This Act authorized the sale of pine timber (reserving 10%), with proceeds to the Chippewa Indians of Minnesota. It also required a Commission to estimate the value of the timber reserved from sale by both 1902 and 1908 Acts, and authorized payment of $1.25 per acre for the lands.

Fifteen years later, the Commission finally completed its task. It filed with the Secretary of the Interior its findings and award, which settled the sale of timber and lands within the National Forest. The Treasury Department was requested "to place to the credit of the General Chippewa Fund the sum of $1,490,195.58", which included the value of the timber reserved from sale, the value of Timber on Ten Sections, Islands and Points, and the value of land reserved for forestry purposes. With the President's authorization on April 9, 1923, complete control over Minnesota National Forest and its timber sales was transferred to the Forest Service. (PR# 184))

5.3 Visual Conditions:

Two members were quite concerned about the visual condition of clearcuts and didn't really like them. There are too many high stumps and too much tall scattered slash and dead trees/snags/logs. It just looks messy. They were concerned with the smaller roads also because that is where they go gathering or driving OHVs.

(Forest Service Reply: Leo told them that we have guidelines for minimizing the detrimental effects of the slash and left-over material for the higher quality/visually sensitive roads. Clearcuts by their very nature will look highly disturbed, but this disturbance (slash, stumps, etc.) will be mitigated more or less depending on the established "Scenic Integrity Objective" from the Forest Plan. The smaller roads normally have less stringent visual objectives, but still receive some treatments.)

5.4 Mud on Roads:

In a similar vein, they were concerned about the amount of mud and slash that gets onto public roads near some logging sites, e.g. along the West Winnie Road.

(Forest Service Reply: I told them that we have guidelines on this and that our Sale Administrators enforce it. Timber Sale Clause R9-CT5-103 specifies surfacing on temporary roads as needed to prevent this. If the road is a system road, the protections are less defined. Loggers are required to do "pre-haul" maintenance to get the roads in usable condition. They can only haul when they will not be doing "increased damage to a resource (the road)", which will limit hauling on muddy roads that would result in deeper ruts and mud dragged onto other roads. However, if such a problem is seen, please call us immediately, so we can correct it while it is happening.)

5.5 OHVs:

There was a distinct difference of opinion on OHVs. One person said they are noisy and disruptive. Another person uses them and says they try to be quiet near people and homes but likes to drive fast in the woods. OHVs allow her to see a lot of things in the forest, that would not be easy without them.

(Forest Service Reply: We have an OHV policy that we will follow, but beyond that it is not a part of the KRM EA project.)

5.6 Local Employment:

They wanted more of our TSI work to be done by local people. They mentioned that they now have a Day Labor Group in Cass Lake and that we could get workers there.

(Forest Service Reply: We will work with the LLBO as feasible under our contracting regulations.)

5.7 Mailing Addresses:

None.

(Forest Service Reply: I obtained current mailing addresses for the members who were present, but not for all of the officers.)

6. Sugarbush LIC - reply to meeting - 08/11 (20)/2008 (PR# 199e)

6.1 Non-Native Invasive Species Control:

You asked specifically about medicinal uses of some of the non-native invasive species that we planned to control.

(Forest Service Reply: This was included in the comments and responses until we decided to drop all Non-native Invasive Species projects from the Kitchi EA and let them be handled by the Forestwide NNIP Management EA. So this comment response is dropped.)

7. THPO - e-mail - 11/08/2008 (PR# 203)

7.1 TCR:

Gina was sent a list of the TCR informants for the KRM EA area, by Andrea.

(Forest Service Reply: None.)

8. no comment but kept to avoid renumbering all of the subsequent comments.

9. Mission LIC - Meeting - 02/16/2009 (PR# 220)

9.1 Meeting:

None

(Forest Service Reply: We went to the meeting, but the meeting was not held. We were not informed of a cancellation although we had confirmed the meeting that afternoon.)

10. LLBO DRM - Meeting - 03/30/2009 (PR# 226)

10.1 Non-Native Invasive Plants (NNIP) EA:

They had comments on NNIP work, which was originally a project in KRM EA also.

(Forest Service Reply: This comment is being dropped from the KRM EA, since the NNIP project was dropped after scoping. The number is being kept in case the other Comment Numbers were referenced in Specialist Reports.)

10.2 Project Boundary:

How was the boundary of this are chosen? Why is it different from the last time this general area was treated? What happened to all of the commitments from the previous analyses/EAs? Last time you deferred many stands and treated others. Now you come back and treat some of the deferred stands. It seems like your past commitments are being changed by the new analysis and moving the boundaries.

(Forest Service Reply: In 2003 we were basing our project boundaries on watershed boundaries. Under the 2004 Forest Plan we do our management based on landscape ecosystems, therefore we changed project boundaries. We look at what was prescribed in the past analyses. However in most cases we were not making decisions to defer in perpetuity selected stands for old growth or other special reasons. We were primarily treating stands or not treating stands to meet goals and objectives (often percentage goals not specific stands) in the Forest Plan. When we analyzed Kitchi EA, again we looked at what needed to be treated or retained to move toward percentage goals/desired conditions in the Forest Plan. Since stands have aged and changed over the last 5 years and since we have a different Forest Plan and since the project boundary is different, the results of this analysis will not be the same as last time. We do not make decisions to defer treatments forever, just to "not treat" them at this time but to look at the whole area next time we re-enter it.)

10.3 Wildlife Openings:

Why do you need to maintain wildlife openings rather than making more closed-canopy areas? Are they adjacent to other open areas? When they were first made, you were doing a lot less harvesting so "edge" was not that common. Now you have a lot of temporary "edge" and shouldn't need these permanent areas. They promote deer of which you have too many and they are of questionable value for grouse. They can become havens for non-native invasive species.

(Forest Service Reply: We are maintaining a selected number of them due to their social value (hunting and wildlife viewing). The maintained openings are not adjacent to other open lands.)

10.4 Sensitive Plants:

What is the procedure for setting aside areas with high sensitivity, like Barott Bog (or the areas of riparian plants found in KRM EA area)?

(Forest Service Reply: Tracy Beck talked about the areas that were already set aside in the Forest Plan - Management Areas for RNAs, Unique Biological, and Riparian Emphasis. The LLBO can propose other areas to the Forest and we will consider them at some time in the future (most likely the next Forest Plan revision). It is unlikely that we would add too many more areas prior to the revision, unless they meet needs that are not met with the current ones.)

10.5 Treating Whole Stands:

Much of Comp 14 Stand 26 is outside the project area. Are you treating it?

(Forest Service Reply: When stands are split by the project area boundary, we will treat the whole stand if we decide to treat any of it.)

10.6 Wording of our Presentation:

During Walker's presentation of their most recent project they talked more about individual stands and about moving toward old forests and mature stands. They stressed the future "trajectories" of the treated stands. Why do you only talk about harvesting?

(Forest Service Reply: Our treatments are similar to Walker's, we just talk more about the immediate treatments rather than long range goals; focusing on groups of similar treatments, average conditions, and percentages of various age-classes or forest types. There are so many treated stands in the project area that we normally do not talk about the prescriptions stand by stand, unless a person has a specific question.)

10.7 Old Growth:

The forest needs functioning old growth stands or old patches, not just old stands.

(Forest Service Reply: We are working toward meeting the Forest Plan desired conditions for a diversity of age-classes and forest types and to maintain the desired amount of old forest patches.)

10.8 Environmental Justice:

Environmental Justice analyses need to be done on the Reservation not just by county boundaries.

(Forest Service Reply: We have been doing environmental justice analyses for all of our projects, however starting with the Continental Divide Resource Management (CDRM) project (due to a LLBO comment); we have been doing the analysis for the counties, plus for the reservation.)

10.9 Future Presentations:

You need to present the project with different maps and tables to make it more understandable.

(Forest Service Reply: In the future we should display the project better by having a map of mature forest with our treatments overlaid, a map of conversions, a map of the old forest patches with our treatments overlaid, and a map of forest types (grouped as is logical).

We should also have short, simple summary tables by LE or totals or something; that would show the existing conditions compared to the alternatives.)

11. LICs - telephone - 04/01/2009 (PR# 227)

11.1 Set up LIC Meetings:

None

(Forest Service Reply: This shows the times, dates, people, and telephone numbers used to set up the future LIC meetings.)

12. Sugarbush LIC - Meeting - 04/13/2009 (PR# 230)

12.1 General:

They had no comments. They said to come back in July.

(Forest Service Reply: We will return when the project is more fully developed. I showed them a small map of the KRM area and told them that the project would be very similar to the Continental Divide EA, except it was almost entirely inside the reservation and included most or all of their homes. When we return, we will have large maps with the proposed projects on them.)

12.2 NNIS:

In reply to the NNIS EA presentation: One of the members lives on Highway 20 and has been pulling spotted knapweed without much success. The roots are tough and very deep. They seemed receptive to using herbicides.

(Forest Service Reply: In the Forest-Wide NNIP Management EA we are proposing to try every feasible control method, including mowing, cutting, digging, biocontrol, and herbicides. This will be followed by over-seeding to try to get other plants established smothering out the NNIS.)

12.3 LIC:

One of the members explained that the LICs report to the Council who are supposed to listen to their views. The program areas, e.g. DRM, work for the Council, so are supposed to implement the ideas from the LICs.

(Forest Service Reply: This is good to know.)

13. Cass Lake LIC - Meeting - 04/13/2009 (PR# 231)

13.1 General:

They had no comments on the KRM EA project.

(Forest Service Reply: We will return later with a more developed project.)

13.2 DRM:

One member expressed concern over how the DRM represents the LLBO.

(Forest Service Reply: None.)

14. Mission LIC - Meeting - 04/20/2009 (PR# 235)

14.1 Sugaring:

Is there any sugaring in the stands you are treating on the reservation?

(Forest Service Reply: We do not know of any sugaring in the stands proposed for treatment in the KRM EA project. There are no known permits for it.)

14.2 Woods Road:

There is a small woods road between CR 33 and Silver Lake that many people use for various activities. Children walk this road to go fishing and swimming. People drive it for pleasure. Traditional resources are gathered along it. They have a hay ride planned along it soon. It is also a popular trash dumping site. Jim and others worked on cleaning it up last summer. There is one bad, soft spot in a swamp.

(Forest Service Reply: I need to check on this road to see what its status is. Is it open to OHVs and highway vehicles? Can we do some maintenance?)

14.3 Fishing Pier:

A fishing pier would be good at Silver Lake, Mission Lake, and Lost Lake.

(Forest Service Reply: We had asked them if there were any projects they would like to see in this area. We will study Silver and Lost Lakes to see if there is a possibility of building fishing piers there. We do not own any land on Mission Lake but the State does.)

14.4 Blueberries:

When you are planting, can you plant more blueberries? They are hard to find and I have to go to Park Rapids to pick. Anywhere between Cass Lake and Big Lake would be good.

(Forest Service Reply: This has been requested before. We have started having some results from burning under thinned pine in the Lydick EA area. We can look for similar areas here and try burning after the stands are thinned to get more sunlight to the ground. Planting is probably not very effective.)

14.5 Local Representative:

Ribs, their District Representative, would be good to ask about projects. He knows the area very well. He can be at the next meeting.

(Forest Service Reply: We would be happy to hear from him, especially at the next meeting we attend.)

14.6 Meeting:

July is busy, but could you attend the August meeting.

(Forest Service Reply: We will plan on attending the August meeting with larger maps of proposed projects, so you can comment on them better; if the project continues on schedule. This is the 3rd Monday at 6:30 p.m.)

15. MN DNR - from S.O. - 04/24/2009 (PR# 237)

15.1 DNR Contacts:

... there should only be 2 DNR contacts for our scoping letters ... Craig Engwald and Mike Carrol should be the only folks you send scoping letters to. ...

(Forest Service Reply: We will send scoping letters to only these contacts, unless someone else specifically requests one during the scoping process.)

16. USDI Fish & Wildlife Service - e-mail - 04/30/2009 (PR# 238)

16.1 Contact Person:

We need to replace Susan Oetker with Tamara Smith as our contact person with the Fish & Wildlife Service.

(Forest Service Reply: This will be done on our mailing lists.)

17. LLBO DRM - FTP Site - 10/14/2009 (PR# 239s)

17.1 Information:

None

(Forest Service Reply: The alternative shapefiles have been put on an FTP Site for LLBO DRM and others to access.)

18. LLBO DRM - Document - 10/19/2009 (PR# 239t)

18.1 Information:

None

(Forest Service Reply: In case they couldn't get the FTP Site to work (after many tries), I sent a CD with the alternative shapefiles.)

19. LLBO DRM - Meeting - 10/27/2009 (PR# 239v)

19.1 Riparian/Mississippi River:

C-13 St. 18, 25, and 27 (as well as the other stands along the river). DRM would prefer the smallest openings possible so aspen and birch are not regenerated.

(Forest Service Reply: We are planning on group selection harvests moving the stands more toward northern hardwoods and oak and planting some white pine along the river. We will make the openings as small as practical to be light on the land - small groups, no harvest within 200 feet of river or open marsh, hand cut openings near river)

19.2 Thinning:

DRM does not want us to do row thinning.

(Forest Service Reply: We strive to leave diversity of species in the stands, leaving many species that are not the planted conifer species. Row thinning is only done in the first-time thinning when it is necessary to make access paths for the logging equipment.)

19.3 Clearcutting mature red pine:

DRM says the Forest Service has a trust responsibility for traditional resources that forbids clearcutting any stands of mature red pine. DRM says we should be managing these stands for structure, age, and species composition, not regeneration. (DRM mentioned 4 goals in a Northern Regional Plan - which plan, I do not know.)

(Forest Service Reply: We are unable to locate any documents that address clearcutting in red pine stands as related to trust responsibilities. We usually do not clearcut red pine even when it reaches maturity (often thinning it instead) because we know it can grow for a long time. However we are allowed to clearcut it under the Forest Plan which sets a rotation age (maturity) for red pine. The

KRM EA proposes some red pine clearcutting and replanting with red pine, in varying amounts between alternatives.)

19.4 Mature Red Pine in C-140 St. 9:

DRM said that Elaine Fleming (professor at Tribal College) was highly upset several years ago when we harvested an adjacent mature red pine stands, saying that this is a spiritual site. DRM said that we should do one of two things: either not harvest Stand 9 due to tribal interests or leave large red pine reserve patches. There is apparently tribal land with tribal cabins on Little Rice Lake just east of here. DRM asked if the jack pine planting east of St. 9 was successful.

(Forest Service Reply: Early in 2009 we thought that to keep the maximum volume alternative, we would harvest the stand and plant red pine in Alternative B, but defer treatments in Alternatives C and D. Later in 2009 as the final project was being designed, it was decided to defer this treatment in all alternatives due to tribal concerns.)

19.5 Spiritual Values:

C-140 St. 3: DRM says this stand should not be harvested for the same tribal concerns. DRM asked if it hurt by the storm last year and that is why it is getting the salvage harvest?

C-140 St. 13: DRM says this stand should not be harvested for the same tribal concerns.

(Forest Service Reply: Stand 3 is not known to have been in the storm, but has a lot of overmature aspen that could be removed to release younger hardwoods and conifers. Due to the benefits to gathering of regenerating birch and increasing white pine, we will keep Stand 13's harvest in Alternatives B and C but defer it in Alt. D due to tribal concerns and to see the difference in effects.)

19.6 Sugar Maple:

C-37 St. 4: DRM says medicinal plants are gathered in the stand and that any harvesting makes it too brushy for a sugarbush. Keith said that if we need to remove some old maple or competing trees, we should girdle them and leave them as snags. There may be outside money for this type of job from the County or DNR. This stand is also near tribal lands.

C-129 St. 8: DRM feels this stand should be deferred or have an individual tree selection cut not a group cut if it is a sugar maple stand.

C-129 St. 87: DRM says the south end of this stand is mainly sugar maple so not a good candidate for clearcutting.

(Forest Service Reply: Stand 4 is an interesting sugar maple stand that was fieldchecked. It is rather unique with vernal pools and rolling hills. Early in 2009 we thought that we would alter the proposal to include this stand in Alternative B but drop it from Alternatives C and D. Later in 2009 as the final project was being designed, it was decided to defer this treatment in all alternatives due to tribal concerns.

Stand 8 is a mixture of aspen, birch, and northern hardwoods, so a group selection would work well to harvest the overmature trees and increase the percentage of northern hardwoods in the stand. However, it determined in 2010 that this stand was on suitable BOMO habitat, contiguous to a known plant site, so group selection was not an acceptable harvest method. Since removing old aspen and birch would increase the percentage of northern hardwoods, it was decided to do an individual tree selection cut in Alternative B, but to defer the harvesting in Alternatives C and D due to the BOMO habitat and the tribal concerns.

We feel there are benefits to harvesting the old aspen in Stand 87, so early in 2009 we maintained the clearcutting in Alternatives B and C while reserving almost all northern hardwoods in the stand. The treatment was deferred in Alternative D to reply to tribal concerns. Later field reconnaissance showed that the stand had a higher percentage of northern hardwoods, so was more appropriately

called a 2-aged shelterwood harvest (which will be done in the decision notice, since it was too late to change the activities database by this time), increasing the percentage of northern hardwoods but maintaining the aspen/spruce forest type.)

19.7 Jack Pine:

C 39 St. 27 and 55: Steve is concerned that dense jack pine stands are a **fire hazard** near this community. Susan is concerned about the effects of site preparation (disking or scraping) on the ecology of the stands. Keith said that disking delays major TSI about 3 years. These stands are also near allotted tribal lands.

(Forest Service Reply: These are aspen/birch stands that we propose converting to jack pine. We discussed leaving either uncut green fire breaks, regenerated aspen firebreaks, or regenerated aspen/jack pine firebreaks. An uncut area could be a worse hazard in the future as the trees die and fall. About 200 feet of aspen regeneration would be an okay firebreak. About 200 feet of aspen with scattered planted red and jack pine would be better since it would keep some benefits of jack pine, while preventing a crown fire and this is what we will propose in all three alternatives.)

19.8 Balsam boughs:

DRM wants to know where tribal members can collect balsam fir boughs in upcoming timber sales.

(Forest Service Reply: If we have sales inside the reservation that have abundant small balsam fir, we will try to remember to tell Gina and Keith shortly before the sale and they will inform bough cutters so they can make use of them before they are crushed in the logging. This will work where we don't want to retain all fir in the future stand.)

19.9 Wildlife openings:

They do not want all wildlife openings maintained. Some should be planted or allowed to regenerate back to the adjacent forest type.

(Forest Service Reply: We are proposing some maintenance, but also a lot of planting or allowing them to reforest naturally. There may be some "grant" funding for doing some of this work if KV or sale funding is not adequate.)

19.10 2009 DNR Lowland TES Surveys:

Apparently the DNR (Erika Row) has been doing extensive surveys in 2009 (the Minnesota County Biological Surveys) of areas that look special, including some lowlands, to find high quality ones primarily based on the presence of "rare" plants. (PR# 376a, 376b, 403a, and 403b) Steve pointed out three areas in Kitchi where the DNR has found large "important" areas with abundances of orchids or other lowland species. These are west of Flora Lake, south of Meadow Lake, and west of Bass Lake.

West of Flora Lake nothing special was discussed.

South of Meadow Lake C-129 St. 5 is a tiny pond with a lot of special plants around it (19 orchids found in this general area). Steve mentioned that this may be a good site for a Special Plant Protection Site SPPS). Farther south C-129 St. 45/46 may also have a lot of special plants. You have a clearcut proposed in Stand 31 just west of it, so will need to be careful and protect the wetland plants and hydrology.

West of Bass Lake is in the CDRM EA area. The pond ½ mile west of North Twin Lake is a duck molting pond, very isolated. It has an old canoe left on the shore with an OHV trail coming from Sven?'s homesite to the west. The canoe should be removed and the trail eliminated. Isolating the pond would be good and it may be a good SPPS. The pond ¾ mile west of Bass Lake has a canoe parked on it that is actively used. It should be removed.

(Forest Service Reply: We will take these three sites into account when analyzing the projects and when writing the prescriptions, so the importance of the sites will be protected. Need to find out more about these surveys and what a SPPS is. Section 3.1.3.2 contains a discussion about these surveys and the results of them.)

19.11 Andrusia Boat Landing:

DRM opposes new development. One of the goals they mentioned was to "retain undeveloped contiguous lakeshore", so at the very least the new landing should be in conjunction with the developed resort area. To restrict the input of non-native invasive species, they want to limit the number of accesses on a lake, especially for future control efforts.

(Forest Service Reply: We proposed a new landing on the southwest side of the lake near the resorts (2-41-4) but based on comments like the one above have deferred this idea. We decided that the best course of action would be to propose a new parking lot north of Highway 12 about 200 feet east of the landing (2-36-5) that would be large enough to accommodate the existing users that are now parking on the highway. We may also have to install a long roller dock for boats to park at while the drivers park and walk back.)

19.12 Peterson Road:

This road (FR 2238) just west of North Twin Lake is supposed to be closed and has a gate but OHVs still drive it. This should be more effectively closed. Only the very south tip is in KRM EA area.

(Forest Service Reply: This road is on our system as a closed, gated road and on the OHV Use Map as closed to OHVs, so there should be no OHV use on it. More effective implementation and law enforcement is needed.)

19.13 Bass Lake Road:

DRM says this lake should be retained as a carry-in lake. Effectively close the road from the south. Do more law enforcement to keep OHVs from bypassing the road closure near the North Twin Portage.

(Forest Service Reply: We will analyze the effects of two alternatives for this road in the KRM EA due to local concerns: closing this road and fixing it so only one road is impacted in this area. Currently the road is supposed to be closed but OHVs and other vehicles routinely violate this closure.)

19.14 Protecting regeneration by hunting:

DRM proposes deer hunting heavily in the areas to be planted. This may reduce deer browsing a little bit.

(Forest Service Reply: This is an issue that needs to raised with the state who has jurisdiction over hunting. Consequently, it is outside the scope of this project. Requesting this type of management may be discussed with the State and may be considered for the future but it will not be treated as a project or analyzed in this EA.)

19.15 Red Pine Plantation in C-135 St. 42:

This stand appears odd on the photo.

(Forest Service Reply: It turns out that the red pine was planted in strips with wide windrows and open strips or brush and aspen in between. The strips will be thinned and other species will be allowed to fill in the open areas naturally.)

19.16 Grandpa's Point:

Grandpa's Point is the general area where the Mississippi River enters Lake Winnibigoshish. Gina may know if there is any special needs there. It appears that it was a traditional fishing spot and a youth camp.

(Forest Service Reply: We are not proposing any projects in this area. No one proposed any specific projects.)

19.17 Owre Area:

One stand in the Owre Area is proposed for a birch shelterwood cut (2-40-15). There was discussion about any harvesting in this area due to past management plans and public discussions.

(Forest Service Reply: It appears from the original management plan that only the large aspen stand by the lake was deferred as old growth timber. Each entry we are allowed to look at the stands to see what would be best for them. The Forest Plan does not mention any special management for the area. For maximum volume this stand is being harvested in Alternative B, however it is being deferred in Alternatives C and D due to the Owre tract management.)

19.18 Scoping:

The DRM requested shapefiles of the proposed action and alternatives when they receive the **scoping letter**, so we do not have to wait for a separate request for this information.

(Forest Service Reply: We will send the shapefiles with the scoping letter.)

20. LICs - telephone -11/03/2009 (PR# 257)

20.1 Set up LIC Meetings:

None

(Forest Service Reply: This shows the times, dates, people, and telephone numbers used to set up the future LIC meetings.)

21. Sugarbush LIC - email -11/04/2009 (PR# 258)

21.1 Location of Sugarbush LIC Meeting:

By e-mail we were told the location of the Sugarbush LIC Meeting.

(Forest Service Reply: We will be there.)

22. THPO Gina Lemon - email - 11/05/2009 (PR# 264)

22.1 Consulting with LICs:

I would suggest asking the Council Members if any of them have email addresses that you can or the FS can forward information to them prior to the LIC meetings. ... {This} would generate more conversation and allow them time to review, simply making a more beneficial meeting. Because in my opinion, what you would be doing is, what you said, presenting information. That is not really considered consultation, however, if you have follow-up calls to them or email messages that they provide comments on would be better than not inquiring to find out if they have any more to add at a later date.

(Forest Service Reply: We will try for alternative contact methods. We have been doing two meetings: the first to present and explain the treatments and the second to get more comments.)

23. LLBO (Steve and Gina) - e-mail - 11/06/2009 (PR# 265)

23.1 General:

Nothing of concern with projects listed. ... things are running smoothly, especially with the larger projects. ... any project that affects lake shore properties is very much a concern for Gina. ... Gina had a concern about the detailed information on site we put in the EA.

(Forest Service Reply: We will continue to keep them informed about the various projects. We will put in less detailed information about sites.)

24. Sugarbush LIC - Meeting - 11/09/2009 (PR# 270)

24.1 Big Lake Boat Landing:

Big Lake Boat Landing is too small.

(Forest Service Reply: We are proposing enlarging the parking lot to handle the current level of use safely, but not to increase capacity. This will put the existing cars into a parking lot, not along the main road and the boat landing road.)

24.2 Star Island Toilet:

They didn't see the reason for a toilet on Star Island.

(Forest Service Reply: I pointed out the amount of use the portage to Windigo gets, which really requires better sanitary facilities. We have been trying to get this toilet since the Cass Lake EA in 2003, at

which time it was not made part of the Decision Notice because of sensitive concerns over possible heritage sites on the island.)

24.3 Timber Harvest:

No comments on timber harvesting.

(Forest Service Reply: I spent a long time going over the types of harvesting we would be doing and showing the general locations.)

24.4 Flora Lake Jack Pine:

What is being done by Flora Lake, where I live?

(Forest Service Reply: The main project by Flora Lake is the thinning of the jack pine to minimize the hazard of a crown fire near all of these houses. There are three levels of management. Alternative B proposes a heavy row thinning which would be the best protection from fire, but also have the most impacts on traditional resources and visual conditions. Alternative C does a lighter basal area thinning with few or no rows, so it is visually less intrusive and may have less impacts on traditional resources. Alternative D defers the thinning due to tribal concerns, leaving the fire hazard in place.)

24.5 Tribal Lands:

Does the map show allotted land (tribal lands)?

(Forest Service Reply: On this map the tribal lands are lumped in with all other private lands. I pointed out a couple of allotted 40s that I knew about and said that we are cutting near some tribal land and not treating near others.)

25. Cass Lake LIC - Meeting - 11/09/2009 (PR# 271 and 271a)

25.1 Respect the Land:

Isn't the "Chippewa" to be respected and left alone? So, you can go anywhere and cut anything? Is the forest service allowed to cut trees? There was a lot of discussion of tribal needs.

(Forest Service Reply: We manage the Chippewa National Forest according to the Forest Plan, which was developed using public comments.

Briefly explained why the forest harvests timber and why the forest has the right to cut timber on National Forest System land. Timber harvest direction given by the Forest Plan. Briefly explained Forest Plan guidelines and goals.

We gave an overview of the NEPA process. The Kitchi EA will go out to the public in April or May and have a decision made in August or September.

The goal is to do ecological restoration where possible and practical within the Forest Plan guidance.

We explained a little about harvest types. We gave each member a handout on silvicultural methods and systems.

We talked about programs aimed at involving the tribe and educating the tribe on traditional activities: Stevens fund and fire, Camp Rabideau School, and Blueberry grant.

They had a concern for traditional activities such as blueberries. FS should try to do a better job getting blueberries back in the landscape.)

25.2 Harvest Money:

Why don't we get some of the money from harvested timber? Where does the timber money go? Does it go to the tribe?

(Forest Service Reply: See the response to Public Comment 5.2 above.

Some money goes to reforestation and other activities on the forest. Some money goes to the state and county, particularly for roads and schools.)

25.3 Do comments matter:

Do our comments matter? Will anything change because of them?

(Forest Service Reply: Leo explained the NEPA process and that we are at the very beginning of the process for KRM EA. He said that we will have from three to four more contacts with them. They will receive the Scoping Letter in about 2 weeks, another visit to their LIC in a month or two, the Public Comment Period EA in the spring, and the Decision Notice in the summer. Their comments matter very much. If they feel strongly about something, we will look at that and it may change a treated stand or a prescription. However, the earlier we have that information, the better we can use it. Section 2.1.3 in the EA is a discussion of changes made to the project and alternatives since it was first proposed. It should be noted that many of the changes have been made due to LLBO concerns, as documented in the tables in that section.)

25.4 Need more input:

You need a broader forum for this information, not just the four of us. They suggested we talk to larger groups, maybe a public meeting. DRM should be involved somehow or organize it.

(Forest Service Reply: We have gone to the LLBO DRM and will go to 3 other LICs about this project. We look at the LIC members as representing the community's views. You display a wide range of viewpoints, from Noel who has only been here a year and has more urban ideas to Lucille who has spent 78 years in this area.)

26. Cass River LIC - Meeting - 11/10/2009 (PR# 272)

26.1 Meeting:

(Forest Service Reply: We went to the meeting, but the meeting was not held. Three tribal members were there also. Neither we nor they were informed of a cancellation. I gave the map and handouts to Sandy for her to distribute or post at the LIC building and told them that we would come back to a meeting with them when it was held in the future. Sandy said it should be soon, not necessarily at the regular monthly time.)

27. Sharon Klinkhammer/Rob Harper - e-mail - 11/11/2009 (PR# 276)

27.1 MN DNR Contacts:

Last April Rob directed us to send all DNR contacts to Craig Engwall and Mike Carroll. At a recent meeting some DNR staff indicated that they did not receive information recently sent out

(Forest Service Reply: On 11/11 Rob directed us to "Keep sending to Craig and Mike as they asked us to.")

28. LLBO DRM/THPO - Letter - 11/20/2009 (PR# 286e)

28.1 Shapefiles:

None

(Forest Service Reply: The note that is PR# 286e was sent to 9 people. Steve will be receiving a CD with the Kitchi EA GIS project on it electronically in case this would help you analyze the project better.)

29. Various Public and LIC Members - letter - 11/23 to 27/2009 (PR# 298, 298a, 301, 303, 303a, 303b, 304, and 308)

29.1 Scoping letters returned due to wrong addresses:

Leonard Headbird, Pete Schinke, Ron Otterstad, Milton Gotchie, Karen Rogers, Caroline Monroe, Arlund Wakefield.

(Forest Service Reply: We re-sent the letter to Milton Gotchie, because he was the only one with a new forwarding address (PR# 308).)

30. MN DNR (Jack Olson) - e-mail - 11/24/2009 (PR# 300, 306, 306a, and 307)

30.1 EA and Shapefiles:

The scoping letter and attachment for the {KRM] Project have been distributed to DNR staff working in the project area for review. Comments from DNR staff will be submitted through DNR Regional Director Carroll.

Can you send me shapefiles for the project boundary and proposed management activities. ... I will make them available to interested DNR staff so they can overlay them to see how the proposed projects relate to activities they may have planned on state lands.

(Forest Service Reply: Jack was sent 3 copies of the project boundary and the scoped Alternatives B, C, and D on CDs on 11/30/2009 and informed that the same information was on our FTP site in case he can access that.)

31. Shirley Beaulieu - telephone - 11/27/2009 (PR# 305 and 314)

31.1 Request Maps:

She requested detailed maps of the alternatives, as mentioned in the scoping letter. She is a member of the Sugarbush LIC.

(Forest Service Reply: On 12/1/2009 we sent her copies of the maps for harvest and regeneration for the scoped Alternatives B and C and D.)

32. Cass River LIC – meeting notes – 12/08/2009 (PR# 325)

32.1 Big Lake Landing:

Where is the Big Lake Boat Landing and what are you doing?

(Forest Service Reply: It is on the east side of Big Lake. In 2009 we told them that we are planning on filling in the wetland in the center of the parking lot to make room for more parking. Also the sides and area toward the road will be brushed effectively to make vehicles more visible to reduce vandalism. In 2010 it was decided that leaving the existing parking lot as it is, with a larger parking area just east of it on the upland would be a better idea. There would be no wetland impacts and it would be more visible so should be subject to less vandalism. This lot will be large enough to accommodate the existing users who now park on the sides of the roads where there really isn't room to park safely.)

32.2 Andrusia Boat Landing:

Andrusia Boat Landing – they had no comments about this project.

(Forest Service Reply: None.)

32.3 Winnie Boat Landing:

Will there be any work within the Winnie Boat Landing Harbor in connection with the enlarged parking area? The snails are mainly in the harbor and along this section of the shoreline, right?

(Forest Service Reply: The proposed project is to enlarge the parking area for boat trailer parking to accommodate the existing users who now park on the sides of the roads where there really isn't room to park safely. The previous NEPA project (Sand Plain EA) proposed cleaning and working with the harbor. As of April, 2010, the harbor is closed due to the Faucet Snail infestation. We are following the lead of the MN DNR on this closure. Beyond closing the harbor they are not sure what we can do to alleviate this problem. The Faucet Snail is a non-native species. It contains a parasite that kills diver ducks when they ingest it. The warmer water in the harbor is advantageous for this snail. Richard's Townsite has some snails but this is in the cooler main lake so is less of a problem. It appears that they are spread between lakes or around a large lake in the live-wells of boats and on vegetation attached to boats and trailers.)

32.4 LLBO DRM involvement:

Have you involved the LLBO DRM in the planning process?

(Forest Service Reply: Yes. We are trying to meet the needs of the LLBO Band, e.g. berries, birch bark, hunting, spiritual uses, and other traditional resource gathering. We have met with the DRM and with several LICs about this project. There is not one consistent response to our proposals. There are different goals between LLBO timber, wildlife, and other resources; just as there are within the Forest Service.)

32.5 Bass Lake Road:

Where is the Bass Lake Road and what are you doing?

(Forest Service Reply: Bass Lake is presently designated as a carry-in fishery with access from North Twin Lake. There is an old road (partly closed and partly system road) east of the lake that is used by ATVs and 4-wheel drives to access the lake. Since they are not on a system road, they often use several user-developed trails/roads to access the lake resulting in damage to orchids in the Gilfallen Area. We have apparently effectively closed the access from the north. To keep it as a walk-in fishery, we need to effectively close the road/roads from the south, while still allowing legitimate access to the other parts of the land.)

32.6 Black Ash and Emerald Ash Borer:

What about black ash? Will we lose all of it to the Emerald Ash Borer?

(Forest Service Reply: We know of no way to stop the spread of the borer. It appears that the borer will eventually get to all the ash. The movement of infested firewood appears to be the main vector for the fast spread of the insect. At this point we know it is in Minneapolis, so could be closer to us already. We are storing seed in anticipation of the development of resistant trees or to plant after the borer kills all the present trees and dies out (maybe??). There was a black ash symposium in May in Bemidji. All of the latest experts gave the results of their research or ideas of up-coming research. So far it appears that there are ideas for slowing the spread of the borer, but no definite way to prevent it from moving to all the ash.)

32.7 Conversions:

Why are you doing conversions between forest types? Is this a natural progression of the species? We like to see the conversions to white pine or the components of it.

(Forest Service Reply: We have a number of reasons for conversions. Some of the aspen is not on the best sites and we have an overabundance of it; so we are often converting to other species that are more appropriate for the site and that are desired under the Forest Plan. Sometimes we are trying to get back to previous historic forest types. Often past management has removed white pine or other long lived conifers from a location. We are trying to restore white pine, red pine, or white spruce.)

32.8 Star Island Toilet:

Where is Star Island Toilet and what are you doing with this project?

(Forest Service Reply: Presently there are portable toilets at the Windigo Lake portage, which are very expensive to maintain, unattractive, and often are inadequate for the amount of use of the area. We are planning to install some type of permanent structure that is adequate for the heaviest use periods. Implementation would occur in an area that would not impact heritage and archeological resources.)

32.9 Winnie Campground Road:

What is the Winnie Campground Road project?

(Forest Service Reply: This is an obscure road in the campground that needs a little more effective closure. As mentioned later in Comment 38.10, this is more of a maintenance issue and will not be carried forward in the analysis.)

32.10 Gina's TRU GIS Files:

Are you using the Tradition Resource Use Study that Gina completed a few years ago?

(Forest Service Reply: We refer to the GIS maps. They list broad, general areas of use, so are not good for site specific mitigation, but that we get from the LIC and DRM meetings. When we know that certain stands or small areas are special; this is considered in the analysis and stand treatments are modified or dropped as necessary.)

33. MTPA (Ray Higgins) - letter – 12/16/2009 (PR# 329)

33.1 0-9 Year Age-class, High Risk Timber:

MTPA reviewed the forest inventory associated with the project area. This analysis clearly shows that the management actions proposed in the scoping materials provide for little change forest composition in a ten year time period (2010-2020).

The forest plan outlines management objectives by Landscape Ecosystem (Chapter 2, FP). In general, the forest plan recommends 5-9 percent of the forest area to be in the 0-9 age-class. Currently, the project has 4 percent of the forested area within this age-class. However, analysis of the proposed final harvest acres shows that over the next ten years at most maintains only 4 percent of the acres in the 0-9 age-class. Some forest types which include, jack pine, white pine, white spruce, and lowland conifers would have no young forest habitat in 2020.

Further, the proposed management actions (alternative b) would additionally increase the amount of forest acres that are considered high risk. Currently, there is approximately 8,053 acres of forestland at high risk. In 2020, there would be more than 9,931 acres in this category (tables 1 and 2).

A review of MTPA's analysis is included in Tables 1 and 2. These tables show forest acres by forest type and age-class for 2010 and projected to 2020 following implementation of alternative b. These tables additionally show the amount of acres that are above minimum rotation ages (FP, Table S-TM-5, page 2-20) and stands that are considered to be at high risk. High risk stands are identified based on the biological rotation age of stands. At these ages forest types become highly susceptible to insects and disease infestations.

Review of tables 1 and 2 reveal that the proposed management actions do not move towards the objectives outlined in the forest plan. In fact, in 2020 there are more acres at high risk than in 2010.

MTPA recommends an alternative that would harvest additional acres. Such an alternative should meet young forest habitat objectives identified in the plan. This alternative would require final harvest of 2,072 acres. The proposed actions only recommend regeneration harvest on 1,014 acres.

Age-class	Balsam Fir	Aspen	Birch	White Spruce	Jack Pine	Red/White Pine	Oak	LI Hwds	N. Hwds	Swamp Conifer	Cedar	Total
1-10	21	919	57	5	212	56				4		1,274
11-20	56	2,345	45		189	148			80	2		2,866
21-30	57	1,783	7	294	37	196		6	69	72	3	2,523
31-40		1,883	13	118	27	410			4	11		2,465
41-50	29	1,059	24	296		565	9		57	169	11	2,218
51-60		356	21		24	95		1	447	70		1,014
61-70	27	377	328		53	286		18	425	156	65	1,735
71-80	121	1,501	390		143	228	86	175	608	152		3,405
81-90	35	900	314	11	111	140	19	50	874	303	34	2,791
91-100	27	195	249		11	144	32	82	1,086	265	26	2,118
100+	29	338	100			1,217	31	67	1,127	740	397	4,045
Total	402	11,658	1,546	724	806	3,484	177	398	4,777	1,944	536	26,454
Ac >RA	267	4,727	1,401	11	342	2,015	169	148	2,213	1,005	423	12,722
% >RA	67%	41%	91%	2%	42%	58%	95%	37%	46%	52%	79%	48%
Ac High Risk	211	2,935	1,052	11	285	1,217	31	67	1,127	740	397	8,053
% High Risk	53%	25%	68%	2%	35%	35%	17%	17%	24%	38%	74%	30%

Table 1. Age-class distribution by forest type in 2010. Acres above minimum rotation age and acres of high risk are provided. Currently, 48% of the forest acres are above rotation age, and 30% are at high risk.

Age-class	Balsam Fir	Aspen	Birch	White Spruce	Jack Pine	Red/White Pine	Oak	LI Hwds	N. Hwds	Swamp Conifer	Cedar	Total
1-10	27	665	92		81	103		29				998
11-20	21	919	57	5	212	56				4		1,274
21-30	56	2,345	45		189	148			80	2		2,866
31-40	57	1,783	7	294	37	196		6	69	72	3	2,523
41-50		1,883	13	118	27	410			4	11		2,465
51-60	29	868	24	296		565	9		57	169	11	2,027
61-70		202	6		24	95		1	447	70		844
71-80	27	265	328		30	286		18	425	156	65	1,610
81-90	99	1,417	358		104	163	86	172	608	152		3,160
91-100	35	796	314	11	83	140	19	23	874	303	34	2,632
100+	51	514	304		11	1,323	63	148	2,213	1,005	423	6,056
Total	402	11,658	1,546	724	806	3,484	177	398	4,777	1,944	536	26,454
Ac >RA	240	5,945	1,333	307	261	2,007	169	172	3,087	1,308	457	15,286
% >RA	60%	51%	86%	42%	32%	58%	95%	43%	65%	67%	85%	58%
Ac High Risk	211	2,992	1,104	11	237	1,323	63	148	2,213	1,005	423	9,931
% High Risk	53%	26%	71%	2%	29%	38%	36%	37%	46%	52%	79%	38%

Table 2. Age-class distribution by forest type in 2020 following implementation (alternative b) of management prescriptions. Acres above rotation age and acres considered high risk would increase under proposed actions.

(Forest Service Reply: Alternative B (as in the scoping letter) was designed to be a maximum volume alternative by going through all stands in Forest Types aspen, fir, and birch and determining if the stands could be cut. There are many factors that cause stands to be deferred, e.g. TES species, infeasible access, small/isolated stands, special Forest Plan designations, etc. Alternative B was the most timber that we could find to harvest.

When we first added more stands for Alternative B (as in the scoping letter), we concentrated on harvesting more aspen and birch; however, we forgot to add more red pine clearcutting which would also add more volume. At this time in the analysis process the most we can do is to change the prescribed thinning of old red pine (over rotation age, which could be 1½ x in MA 10.2) to clearcutting the same stands (since the surveys will be done or close to done). We cannot add additional old red pine stands for clearcutting because they do not have the appropriate surveys yet. These red pine stands will be scarified and planted back to red pine. The prescription would have to avoid planting red pine under larger reserved red pine, due to the potential for Diplodia infections. Thus the reserve trees would have to be non-red pine or be isolated clumps of red pine.)

33.2 New Alternative:

MTPA recommends that the district develop and analyze the following alternative.

Increase the amount of final harvest acres (clear-cut with reserves) by 1,090 acres. This would provide for young forest habitat objectives outlined in the forest plan over the next decade. Harvest of these acres should occur in the following landscape ecosystems.

DMP, 23 acres upland forest types.

DMPO, 934 acres upland forest types.

DP, 90 acres upland/lowland forest types.

MNH, 44 acres upland forest types.

Identify additional red pine acre for final/regeneration harvest. The project area has more than 880 acres of red pine greater than 100 years of age. The proposed actions, alternative b, only recommend final harvest of approximately 100 acres.

Identify additional aspen stands for harvest. Aspen stands beyond rotation age and greater than 70 years of age increase significantly from 2010 to 2020 post implementation of alternative b.

Design timber sales that can be sold under existing market conditions. This sales include high volumes per acre, >12 cords per acre.

Alternative b only proposed 30 percent of the management actions as clear-cutting. The forest plan states that 38 percent of the management actions (harvest) should be clear cutting. Since the forest plan inception the Chippewa NF has not met this goal only implementing clearcut harvest on 30 percent of the proposed harvest actions.

Maintain road system to access forest lands for protection and management.

MTPA estimates additional harvest of 1,090 would provide for an additional 11 MMBF inclusion of these stands would provide an additional 11 MMBF (19,000 CCF). The positive economic impacts associated with the additional harvest would be an estimated 55 jobs, $550,000 in federal revenue, and $23 million in local and regional economic activity (UMD, School of Business and Economics, 2008). The Forest Service must realize the importance of rural economic activity to support existing and create new jobs.

(Forest Service Reply: As mentioned in Comment 33.1, we have found as much aspen harvest as we could, based on other restrictions. The 351 acres of red pine clearcutting is the most we have proposed in recent EAs. Sales, as designed on the Blackduck Ranger District, have all sold, which should be similar for this proposed project. In this project we are having only 40% clearcutting because of the large number of thinning acres available (it was 30% before we changed 337 acres of red pine to clearcutting). Over the last 5 years Blackduck has harvested 39% of its timber sales by clearcutting (PR# 323). It is anticipated, based on the forest types present, that the next sale (Wagner Lake) will be well above 39% clearcutting (possibly up to 60%), raising the average; but this is not a firmly established proposal yet. The road system will be maintained, only one recreation road is proposed for closure. We have analyzed the past, present, and anticipated timber harvests on the Forest and determined that Alternative B (as in the scoping letter and modified slightly later after the public comments were reviewed) is in line with Forest Plan objectives.

In addition to achieving other resource objectives within the project area, our limitations in budget and our efforts to provide timber sales across the forest, do not allow us to treat every stand that could be harvested. We do our best to treat the highest priority stands, while trying to achieve a balance of resource objectives, recognizing that many stands will be deferred and considered in our next entry.

Positive economic benefits are discussed briefly in the Economics Section of the EA (Section 3.11). They include the payments to counties due to Forest Service activities.)

33.3 Road Decommissioning:

The proposal recommends that decommissioning of roads in the project area. MTPA recommends that prior to decommissioning of roads that the Forest Service fully evaluate the costs of obliteration, evaluate the potential use to access private or other publicly owned property, need for resource protection or management and current

recreational use. Further, we recommend that the Forest Service work closely with other resource managers to determine future access and road needs within the project area.

(Forest Service Reply: Road decommissioning was mentioned in the Purpose and Need for the project in the scoping letter, however when the Proposed Action and alternatives were designed, no road decommissioning was proposed. This KRM EA area has been analyzed for possible road decommissioning under the four past EAs, which was felt to be adequate. Over the past five EAs under the 2004 Forest Plan (Round Island, Northwoods, Bigfork, Lydick, and Continental), the Blackduck Ranger District has designated 77.6 miles (38.6 miles of system road) of roads for decommissioning and 8.3 miles of system roads for deleting from the system because they no longer exist. This goes a long way toward meeting the forestwide Forest Plan goal of 200 miles.)

34. MFI (Tim O'Hara) - letter – 12/16/2009 (PR# 331)

34.1 0-9 Year Age-class, High Risk Timber:

Same as Comment 33.1

(Forest Service Reply: Same as Comment 32.1)

34.2 New Alternative:

Same as Comment 33.2

(Forest Service Reply: Same as Comment 32.2)

34.3 Road Decommissioning:

Same as Comment 33.3

(Forest Service Reply: Same as Comment 32.3)

35. SHPO (Kelly Gragg-Johnson) - letter – 12/18/2009 (PR# 333)

35.1 Section 106:

Thank you for the opportunity to review and comment on the above project. It has been reviewed pursuant to the responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and the Procedures of the Advisory Council on Historic Preservation (36CFR800).

We look forward to consulting with the Forest Service on this project under the Section 106 process. We note that the project is located within the Leech Lake Reservation and that the Leech Lake Tribal Historic Preservation Officer has Section 106 responsibilities as well.

(Forest Service Reply: Further Section 106 consultation will be done with Leech Lake and SHPO later in the NEPA process.)

36. Craig Engwall, MN DNR - letter – 12/22/2009 (PR# 335)

36.1 Vegetation and Wildlife Habitat Management:

Overall, the DNR supports the landscape ecosystem management objectives and projects proposed in Alternative B. Reducing upland aspen cover type acres however, will have a negative effect on wildlife species that depend on this forest type, particularly Ruffed Grouse. The aspen component within harvested stands should be managed even when converting to a different forest type. Some aspen clones or islands within the treated stand should be traditionally clear cut to promote high stem density aspen and fruiting shrub regeneration. This harvest method can also mimic a natural fire event, promoting a mixed species stand with patches of young, even age aspen/hardwoods within an older conifer type.

In aspen types that will not be converted, consider a winter only harvest and the reserve trees should be clumped or left in islands rather than evenly scattered across the entire stand to promote high stem density aspen regeneration. We support the goal of increasing jack pine and encourage the conversion of additional acres to this type by incorporating jack pine as a component of other mixed conifer types, where possible.

(Forest Service Reply: Aspen is a very common species/forest type on the District. In all of our proposals, we strive to meet Forest Plan guidance for the amount and age-class distribution of aspen. Conversion of aspen to other forest types typically does not eliminate aspen from the stand. Full conversion of aspen stands to other forest types may take decades. It is likely that aspen will be a component of "converted" stands for many years after completion of the KRM project. Even when we convert aspen stands to other species, there is some aspen remaining as residual trees or new suckers. How we treat the aspen component in other forest types depends on the future goals for those stands. There are times when clearcutting patches is desirable, but other times when we do not want that density of aspen suckers. The pattern of reserve trees depends on the species and current spacing of the trees to be left. If we are leaving a particular species, then they can only be left where they are growing. If we are leaving a mix of species or a very common species, then we can group them or scatter them depending on a combination of all reasons for leaving them. Usually when we leave aspen, we leave them in clumps - to buffer wetlands, for wind firmness, to retain for a long time for snags, etc. This will be specified in the prescriptions. Jack pine is a valuable species/forest type for the future, so we are maintaining or increasing it.

Conversions are done for biodiversity - to get a mixture of stands either from residual trees, natural regeneration, or by planting/seeding.

Management of clumps of aspen in stands of other forest types can be accommodated. This will be specified in the prescriptions. Clearcutting of aspen clumps and allowing them to regenerate as dense aspen patches is okay, as long as it does not introduce unwanted problems in the stands, e.g. visual concerns, vernal pools, harder to convert, etc. We will consider this in each stand/instance and do it where it will be beneficial or neutral in effects.

We leave or encourage fruiting shrubs in most of our management.)

36.2 Fisheries Management – Stream Flow:

The DNR supports general USFS proposals to maintain stream flow and connectivity through beaver dam removal programs in Kitchi Creek as well as other perennial streams flowing into the many lakes within the Chippewa National Forest. These efforts - in combination with existing spawning habitat in many lakes - would preclude the need for placement of any artificial rock spawning reefs. The DNR would prefer to see walleye spawning habitat enhancement efforts focus on maintenance of stream flow and improvement of instream habitat through beaver dam removal programs.

(Forest Service Reply: Stream management was mentioned in the Purpose and Need for the project in the scoping letter, however no projects were proposed under the Proposed Action.)

36.3 Fisheries Management – Big Lake:

DNR does not support the placement of log cribs (artificial fish habitat or structure) in Big Lake. This lake already has excellent fish habitat for many species of fish, and there is no shortage of spawning, nursery, resting, or feeding habitats for any fish species. At best, artificial habitat structures would only serve to concentrate fish for anglers, especially centrarchids. This would be undesirable for Big Lake, as there are already concerns about excessive harvest of several fish species, centrarchids in particular.

(Forest Service Reply: The fish crib project in Big Lake will be dropped. It was proposed to the District by a resort. Since the DNR feels there is enough structure in the lake and does not support the project, we will go along with them.)

36.4 Andrusia Lake Access:

DNR would support the establishment of an overflow parking area near the existing Lake Andrusia Boat Landing. Use of this landing can be heavy at times, and parking on the highway is a serious safety concern. An alternative solution to this problem would be to simply enlarge and improve the size of the existing parking area; however, the amount of space available is somewhat limited.

(Forest Service Reply: We considered enlarging the existing parking lot, but it is surrounded by wetlands, so any expansion would require filling wetlands which we do not want to do. The proposed new overflow lot is on an upland site. Talking with the Beltrami County Highway Department later (See Comment 42), we found the following. There are no legal requirements for signage or construction for such a parking area. However a county permit is required for the entrance onto the highway. The county maintenance foreman will decide if site distance is adequate and if a culvert is needed. The county engineer will determine if signage is needed or if a crosswalk is appropriate. Doing them could lead to liability or driver complacency if they see signs all year but few people.)

36.5 Pimushe Lake Canoe Access Road:

DNR would support improvements made to the road leading to the Pimushe Lake canoe access. This would allow carry-in access to the north end of Pimushe Lake as well as to the North Branch of the Turtle River.

(Forest Service Reply: We will consider this comment during our analysis. This treatment is a carry-over project that was not completed under the Rambling Woods EA. It is close to just maintenance, but is being retained in the KRM EA because it could have an effect on the recreational resource in the area. We are not improving the landing or trying to increase use at the site, just making the road safe for the current users. We are NOT proposing a back-in landing. We may want to use posts or signage to prevent this type of use. There is some illegal use at the site or in the stream, but this is a law enforcement problem, not really related to this project.)

36.6 Bass Lake Road Closure:

DNR would support closing the access road (from the south) that is being used by OHV's to access the lake. For anglers willing to portage from North Twin Lake, Bass Lake provides a unique fishing experience without any need for stocking or special regulations. These types of lakes are relatively rare in the Bemidji Fisheries management area, and the few we have should be preserved.

(Forest Service Reply: We will consider this comment during our analysis. Bass Lake is designated as a carry-in fishery. There is adequate camping nearby and a good portage between North Twin and Bass Lakes.

However, there is an element of the population that insists on driving to the lake. To thwart this problem we need to look at education (signage, etc.), engineering (closures), and law enforcement. To analyze the effects of having the road open we are proposing in Alternative C to fix the road access to the lake, thereby confining use to one travelway. This may require a Forest Plan amendment and probably consultation with DNR Fisheries.

If we decide to close the road, we need to see if there are other groups (fisheries, orchids) that may be interested in the area and want to help make sure it stays untrammeled.)

36.7 Big Lake Boat Access Improvement:

DNR would support improvements to the Big Lake boat access. The amount of parking space should be increased, although we would have concerns about filling wetlands in order to accomplish that. In addition to increasing the amount of parking area, improved visibility from both the lake and the road may serve to minimize the incidence of theft and vandalism. Improvements to the ramp itself may also be needed, as the ramp is often damaged due to ice-jacking.

(Forest Service Reply: We will consider this comment during our analysis. As with the Andrusia Landing, wetlands are common. However, upon field checking this area after the ID Team meeting it was obvious that there is upland by the main road east of the landing. This should be proposed for the expanded parking area rather than filling more wetland. This should reduce vandalism since the parking is highly visible from the main gravel road. The enlarged parking lot is not designed to encourage more use, rather it is to make it safer for the current users by getting the cars that now park along the roads into a designated parking location.

The spot proposed for filling prior to the ID Team meeting is a black ash swale in the center of the existing parking lot. On all sides of the existing lot, the NFS lands is a big wet area, so there is no good option to wetland filling in that location. Filling that wetland may require a State permit and replacement of the wetland elsewhere. Maintenance of the current parking area is probably pushing small amounts of soil into the adjacent wetland.

The ArcGIS layers were checked for all non-private land around the lake and all of it has wetlands along the shoreline, except possibly in Section 21 along the north shore but this is not a good location for a lot of traffic. There are no alternate suitable boat landing locations on Big Lake that are not in private ownership.)

36.8 Fishing Pier on South Twin Lake:

There is already a USFS boat access on South Twin Lake. This access site could be improved, but it is probably not the best location for a fishing pier. There may be other areas on South Twin Lake that would be more conducive to a fishing pier.

(Forest Service Reply: This was mentioned in the Purpose and Need for the project in the scoping letter, but was not carried forward as a project in the Proposed Action.)

36.9 Kitchi Lake Boat Landing:

DNR would support the establishment of a developed public water access (boat ramp) on Kitchi Lake. This lake has been on Bemidji Area Fisheries' public water access priority list for many years.

(Forest Service Reply: This was mentioned in the Purpose and Need for the project in the scoping letter, but was not carried forward as a project in the Proposed Action. The public has not proposed a desirable location on NFS lands where we could make such a landing. Comment 37.6 from Leech Lake Band proposes putting this landing at the site of "Burnt Bridge". This will be considered in the EA. There is a long discussion of potential boat landing sites on Kitchi Lake in Comment 40.9.)

36.10 Star Island Toilet:

The Windigo Portage on Star Island has a perpetual sanitation problem due to heavy summer use. Well-maintained toilet and garbage facilities are essential, or the problem will simply become scattered throughout the surrounding woodlands. DNR Fisheries supports on-going efforts by USFS to establish adequate and well-maintained sanitation facilities at this location.

(Forest Service Reply: We will consider this comment during the analysis. Comment 37.16 has more discussion of this project.)

36.11 Riparian Areas:

DNR supports general USFS proposals for special treatments within riparian zones including avoidance, establishing or maintaining a diversity of plant species, and planting or increasing the component of long-lived conifers near the water (e.g., white pine or white spruce).

(Forest Service Reply: We will consider this comment during the analysis.)

36.12 Stream Crossing Improvements:

DNR supports general USFS proposals for making improvements to stream crossings where erosion is occurring and/or culverts are preventing the passage of fish or other aquatic species. Stream crossing improvement projects should follow MESBOAC culvert replacement methodology, and be coordinated among county, state, and federal authorities.

(Forest Service Reply: Stream crossing improvement (like Stream management in Comment 36.2) was mentioned in the Purpose and Need for the project in the scoping letter, however no projects were proposed under the Proposed Action.)

37. Leech Lake Band of Ojibwe (Bruce Johnson) - letter – 12/22/2009 (PR# 340)

37.1 Review:

The Leech Lake Reservation Division of Resources Management (DRM) has reviewed the Kitchi Resources Management Proposal and outlined below are concerns and questions we have about the proposal.

(Forest Service Reply: All comments from Leech Lake Band will be considered in the NEPA process. Answers to each comment will either be given in Appendix C or will be brought forward in the EA where they fit, e.g. alternative development in Chapter 2 or analysis of effects in Chapter 3.)

37.2 Traditional Gathering:

There are a number of areas proposed for harvest that receive extensive use by tribal members for traditional gathering. These tribal members want to continue utilizing these areas as they have in the past and under the same condition as they are currently. For this reason we insist that these stands be dropped from the proposal. With the exception of pine trees, and some lands, the Leech Lake Band never relinquished any of the other resources found on lands or waters within our current or historic boundaries. The use and management of these resources are still retained by the Band. Chippewa National Forest (CNF) needs to bring tribal resource needs to forefront of their proposed projects. The vigor, abundance, and access to these resources must be actively pursued by CNF to fulfill its primary responsibility: ensuring the protection and proper management of tribal resources. The stands we want dropped include:

(Table 1) {Table App. C 37.2.a -- Traditional Gathering Stands in KRM EA Area as in the Scoping Letter}

Comp	Stand	Location	Issues
37	4	N of Bel. Co. Rd. 12	Active sugar bush, used by a Tribal Medicine man, and schools for educational purposes.
36	8&9	ENE of Andrusia	Light thin only, retain character of stand
140	9	Burnt out Bridge Rd.	Old growth pine used by tribal members for spiritual purposes and hunting. Area is already degraded by previous harvest. Keep out of this stand.
140	11	Burnt out Bridge Rd.	Moderate thin of young pine to promote diversity would be OK.
140	13	Burnt out Bridge Rd.	Utilized by tribal members for hunting, light thin ok, not over 25%, if you won't do this, leave stand alone.
128	18	Burnt out Bridge Rd.	Moderate thin of young pine to promote diversity would be OK.
128	48	Burnt out Bridge Rd.	Utilized by tribal members for hunting
128	14	Burnt out Bridge Rd.	Utilized by tribal members for hunting
133	15	Belt. Co. Rd. 20	Adjacent to tribal lands used for hunting and gathering, no harvest in this stand
133	52	Belt. Co. Rd. 20	Adjacent to tribal lands used for hunting and gathering, no harvest in this stand
137	8	Flora Lake Tribal Community	Adjacent to tribal lands used for hunting and gathering harvest will negatively affect gathering opportunities. No harvest. (Part of stand is actually tribal land.)
137	2	Flora Lake Tribal Community	Adjacent to tribal community used for hunting and gathering. Harvest will negatively affect gathering opportunities. No Harvest
137	7	Flora Lake Tribal Community	Adjacent to tribal community used for hunting and gathering. Harvest will negatively affect gathering opportunities. No Harvest
137	51	Flora Lake Tribal Community	Adjacent to tribal community used for hunting and gathering. Harvest will negatively affect gathering opportunities. No Harvest
137	52	Flora Lake Tribal Community	Adjacent to tribal community used for hunting and gathering. Harvest will negatively affect gathering opportunities. No Harvest
131	1	Hales Rd	We believe there is an archeological site at this location

Comp	Stand	Location	Issues
129	87	Meadow Lake Trail	Maple Basswood with scattered aspen. If you clearcut it you will have another aspen stand. You are supposed to be reducing aspen. Change to single tree harvest to retain maple basswood.
15	29	Grandpa's Point	This is a spiritual area and is frequently by Leech Lake people. The proximity of this stand to the Point would have a negative impact on this location. Part of proposed harvest encroaches into a Unique Biological Area at Grandpa's Point. Please remove this stand from the Kitchi Project.
39	27	Mission Community	The community is opposed to clearcutting of these stands, you need to meet with them and discuss these stands.
39	55	Mission Community	The community is opposed to clearcutting of these stands, you need to meet with them and discuss these stands.
12	7&65	Third River Bridge Area	Traditional gathering by Leech Lake Band members is especially high along the river. Due to the proximity to the Mississippi River, Leech Lake Trust Land and high volume of gathering in this area, we formally request that these stands be removed from the Kitchi Project.
26	178 & 1		These stands are a spiritual area for a family residing in the Cass Lake area. Any cutting in this area would be a travesty and show a lack of cultural sensitivity by CNF. These cuts cannot be allowed and should be removed from the Kitchi Project.
13 14	18, 25, & 27 10 & 8		These stands are in close proximity of the Mississippi River and will negatively impact the water quality of the River. A drop in water quality would negatively impact Wild Rice beds growing in the river-of which Leech Lake has sole jurisdiction over. Any action that could diminish the wild rice resource of the Leech Lake people cannot be allowed. It is the responsibility of the CNF to ensure that all resources are protected throughout the boundaries of the CNF. The Leech Lake people draw their power and identity from the Mississippi River. Furthermore, these areas are of high scenic value to both the people of the area and the eco-tourists who visit annually.

(Forest Service Reply: During our alternative development meeting, these stands will be addressed one by one. Eight of the 31 stands are deferred in Alternative D (as in the scoping letter) already.

The stand they called Comp 137 Stand 51 should have been Stand 57.

Proposed treatments in riparian areas are designed to maintain or enhance riparian function.

The Ojibwe used to manage the land prior to European settlement. Based on comments during the January 12, 2010 meeting (Comment 40), they did cutting and burning, but at different intensities than we do now. Their burns would probably have been larger, but their cutting less intensive.

Make sure biomass removal is a possibility in all stands, except where the soil scientist says that slash retention is needed for nutrient retention.

The following table shows how we plan to deal with all of the specific stands that were mentioned in the LLBO Scoping Letter response letter and the Sugarbush LIC/DRM meeting:

Table App. C 37.2.b -- Traditional Gathering Stands in KRM EA Area - With Prescriptions for Alt. B, C, and D (as in the scoping letter)

Comp	Stand	Comments	Alt. B	Alt. C	Alt. D
12	*7*	*High traditional gathering along river. However these old stands lack an understory of regeneration. In B do 1 acre groups plus thin between. In C just do 1 acre groups. Defer cutting in D to respect their concerns. Consider spading in large white pine rather than planting seedlings to avoid the tremendous TSI costs. Could consider lighter options in C: hand cut openings and plant WP or treat with ASV and plant WP.*	*Group selection, plant white pine***	*Group selection, plant white pine***	*defer***
12	*65*	*High traditional gathering along river. However these old stands lack an understory of regeneration. In B do 1 acre groups plus thin between. In C just do 1 acre groups. Defer cutting in D to respect their concerns. Consider spading in large white pine rather than planting seedlings to avoid the tremendous TSI costs. Could consider lighter options in C: hand cut openings and plant WP or treat with ASV and plant WP.*	*Group selection, plant white pine***	*Group selection, plant white pine***	*defer**
13	*18, 25, & 27*	*Close to river, water quality concerns, visual concerns. However these old stands lack an understory of regeneration. In B do 1 acre groups plus thin between. In C just do 1 acre groups. Defer cutting in D to respect their concerns. Stay off steep slopes. Consider spading in large white pine rather than planting seedlings to avoid the tremendous TSI costs. Could consider lighter options in C: hand cut openings and plant WP or treat with ASV and plant WP.*	*Group selection, plant white pine***	*Group selection, plant white pine***	*defer**
14	*8*	*Close to river, water quality concerns, visual concerns. In B and C do thinning. Defer cutting in D to respect their concerns. Stay off steep slopes.*	*Thin*	*Thin*	*defer**
14	*10*	*Close to river, water quality concerns, visual concerns. However these old stands lack an understory of regeneration. In B do 1 acre groups plus thin between. In C just do 1 acre groups. Defer cutting in D to respect their concerns. Stay off steep slopes. Consider spading in large white pine rather than planting seedlings to avoid the tremendous TSI costs. Could consider lighter options in C: hand cut openings and plant WP or treat with ASV and plant WP.*	*Group selection, plant white pine***	*Group selection, plant white pine***	*defer**
15	*29*	*LLBO questions use of this site due to traditional uses by river. Defer Alt D in respect of their concerns.*	*Thin*	*Thin*	*defer**
26	*1*	*Important traditional use area. Defer in C and D to respect their uses.*	*Thin*	*defer**	*defer**
26	*178*	*Important traditional use area. Defer in C and D to respect their uses.*	*Clearcut*	*defer**	*defer**
34	*29*	*Added to list due to subsequent meeting. LLBO uses for hunting and gathering. Drop in D to respect their use.*	*2-aged shelterwood*	*2-aged shelterwood*	*defer**
36	*8 & 9*	*In RE MA. Enhance riparian with bigger pine faster. Not visible from lake. Higher BA in C and D.*	*Thin normal*	*Thin 20 BA higher****	*Thin 20 BA higher****
37	*4*	*Traditional uses preclude harvesting.*	*defer**	*defer***	*defer***
39	*27*	*LLBO opposes cutting this close to the Mission Community. Defer in D to respect their concerns.*	*Clearcut*	*Clearcut*	*defer**
39	*55*	*LLBO opposes cutting this close to the Mission Community and LLBO lands. Defer in D to respect their concerns.*	*Clearcut*	*Clearcut*	*defer**
128	*14*	*LLBO uses for hunting. Drop in D to respect their use. In C add a component of white pine to enhance future diversity.*	*2-aged shelterwood*	*2-aged shelterwood plus plant white pine**	*defer**

Comp	Stand	Comments	Alt. B	Alt. C	Alt. D
128	*18*	*LLBO concern over thinning vs. traditional uses. Promote diversity in C and D by leaving higher BA.*	*Thin*	*Thin lighter, diversity****	*Thin lighter, diversity ****
128	*48*	*LLBO uses for hunting. Drop in C and D to respect their use.*	*Clearcut*	*defer***	*defer***
129	*87*	*LLBO concern over losing northern hardwood stand. B and C cut out aspen but leave northern hardwoods. D defers the harvest to maintain the northern hardwoods and not increase aspen.*	*Clearcut*	*Clearcut*	*defer*
131	*1*	*See HR survey results.*	*Thin*	*Thin*	*Thin*
133	*15*	*LLBO uses for hunting and gathering, adjacent to LLBO lands. Drop in D to respect their use.*	*Thin*	*Thin*	*defer***
133	*52*	*LLBO uses for hunting and gathering, adjacent to LLBO lands. Drop in D to respect their use.*	*clearcut*	*clearcut*	*defer***
137	*2*	*Same as 137-8*	*Thin*	*Thin lighter****	*defer**
137	*7*	*Same as 137-8*	*Thin*	*Thin lighter****	*defer**
137	*8*	*LLBO uses for hunting and gathering, adjacent to Flora Lake community. Drop in D to respect their uses. Keep in B as a normal row thinning. Modify in C to be less visually obtrusive and minimize traditional resource disturbance - lower basal area not rows. Reduce fuel loading to prevent a crown fire in doghair thick jack pine. Favor red pine, white pine, and birch. Retain as much spruce/fir as feasible for screening. Consider commercial thinning, stewardship contract, biomass contract, or firewood cutting.*	*Thin for fuels reduction*	*Thin lighter for fuels reduction****	*defer**
137	*52*	*Same as 137-8*	*Thin*	*Thin lighter****	*defer**
137	*57*	*Same as 137-8 (Stand 57 not 51)*	*Thin*	*Thin lighter****	*defer**
140	*9*	*Defer due to tribal traditional use.*	*defer**	*defer*	*defer*
140	*11*	*Vary thinning due to traditional tribal use. Alt C should be lighter thinning leaving more diversity, and not with straight rows which could become shooting lanes. Try for sinuous rows throughout the stand. Defer harvest in Alt D due to traditional uses (hunting primarily).*	*Thin normal*	*Thin lighter, diverse, not straight lines****	*defer**
140	*13*	*LLBO concerned over traditional use gathering and hunting. Natural paper birch after scarification plus add plant white pine component for diversity. We should check the understory vegetation for diversity.*	*Cut, plant WP*	*Cut, plant WP*	*defer*

** This is a change in prescription from the Scoping Letter.*

*** This is only a change in comments in GIS.*

**** This retains the old prescription but thins to a higher BA, so we will have to find a way to differentiate this in the analysis and tables.)*

37.3 Local Indian Council Concerns:

DMR Staff met with the Local Indian Councils (LIC) from the Mission Buck Lake and Sugar Bush areas on December 14th, 2009. At this meeting we reviewed the proposed actions of the Kitchi Resource Management Project. We identified and discussed seven significant concerns of individual tribal members, families, and their communities. These concerns are provided below:

(Forest Service Reply: None.)

37.4 Harvesting - Clearcuts:

1. The LICs did not want to see any harvest practices (salvage cut, coppice, clearcut, seed tree, shelterwood, and group selection) that would result in a "clear-cut landscape" that effectively degrades the ecological function and the quality and quantity of traditional cultural properties (TCP).

(Forest Service Reply: In our past LIC meetings we have never had all of the members oppose all clearcutting. There were differences of opinion or no comments on how much clearcutting to do or on stands proposed for clearcutting. Ecological functions are multi-faceted, so while clearcutting changes the landscape, degrading some functions, it enhances others.

In all of our prescriptions, even clearcutting, we are striving for species diversity. We leave reserve trees in most clearcuts, which are usually northern hardwoods or conifers. This will be analyzed in the EA.

Clearcutting is dealt with in the table of stands above and in the answer to Comment 37.9 below. In Table 37.2.b there are 6 clearcuts proposed. All clearcuts in these stands are deferred in Alternative D. Two clearcuts are deferred in Alternative C. All are retained in Alternative B to maintain the maximum volume alternative.)

37.5 Andrusia and Kitchi Boat Landings:

2. Community members feel that a public boat access at Kitchi Lake---instead of Lake Andrusia---is needed for tribal members to access tribal fishing and rice beds. Improving access to tribal resources was regarded as a very high priority by the LICs who recognize the CNF's responsibility to consider tribal needs over those of non-tribal resource users.

(Forest Service Reply: We manage very little land on the shore of Kitchi Lake and little of it is in good locations for a boat landing. The public has not told us a specific location for a landing. A landing on Kitchi Lake was mentioned in the Purpose and Need for the project in the scoping letter, but not carried forward in a project. See Comment 40.9 for a longer discussion of a Kitchi Lake Boat Landing.

The Lake Andrusia Boat Landing Parking Lot will benefit all users of the lake, so is going ahead.)

37.6 Kitchi Boat Landing and Burnt-out Bridge:

3. Community members recommend that the CNF strongly consider purchasing property at the end of Burnt-out Bridge Rd to develop a historically and previously well-used lake access on Kitchi Lake by generations for tribal members.

(Forest Service Reply: This is a good consideration for the future, however land acquisition does not require NEPA analysis. This information and request has been discussed with the District and the Lands Section in the Supervisor's Office, but no decision has been reached at this time. Leech Lake Band of Ojibwe could also purchase this land and make exactly the type of landing they desire. A landing on Kitchi Lake was mentioned in the Purpose and Need for the project in the scoping letter, but not carried forward in a project.)

37.7 Comp. 133:

4. Several individuals had specific concerns about stands 133-15 and 133-52 being cut in any manner (see Table 1, now called Table App. C 37.2.a in Comment 37.2). These stands represent strong emotional connections with the woods rooted in their childhood. They would like those woods to remain untouched as a place where their children can also experience the outdoors and connect with their culture and spirituality.

(Forest Service Reply: These stands were deferred in Alternative D (as in the scoping letter) and if there are spiritual/emotional ties to them, they can be dropped in other alternatives. At the present, they are kept in Alternatives B and C (as in the scoping letter), as shown in the table in Comment 37.2.)

37.8 Classroom Stands:

5. Several stands are being used by the Leech Lake Tribal College and Bug School as outdoor classroom to learn medicinal and traditionally used plants. These stands are listed in the Table 1.

(Forest Service Reply: Only C-37 Stand 4 is mentioned in the table. It is deferred in Alternatives C and D (as in the scoping letter), as shown in the table in Comment 37.2.)

37.9 Quality of Life:

6. **Quality of Life!** All tribal members expressed concerns about the effect of timber harvests on the diversity and health of forest plants and animals which form the central core our traditional lifestyle. This traditional lifestyle is made of simple things (e.g. natural or unassuming) that **make life worth living**; basic things that we claim, but can never own---yet, dramatically enrich our quality of life.

What are such things? Making a useful or beautiful thing with one's own hand, sharing food with others that you have gathered and prepared of your own effort, gathering medicinal plants as your ancestors did and making home-remedies with your own knowledge, sharing this knowledge with children, yours and others', preserving the future of gathering medicinal plants not currently known as such, and the sharing stories while hunting or fishing with family or friends.

The list of simple joys that we appreciate, value, and protect is long. These "simple pleasures" are difficult to measure or quantify and as a result remain undervalued; yet, they are the basis of a healthy emotional, physical, and spiritual life. How can quality of life for our people continue to be such a low management priority?

The Forest was created to protect and enhance our un-relinquished gathering rights, not to protect the quality of life for loggers and recreational users! Our lifestyle requirements must to respected and elevated to the highest level of management considerations ...preceding all other concerns.

(Forest Service Reply: All national forests were created with multiple uses in mind (watershed, timber, recreation, range, and wildlife/fish). The fact that the Forest overlaps the reservation means that traditional resources and gathering rights receive much higher consideration.

We have developed Alternative D (as in the scoping letter) to respond to the individual stands that the LLBO mentioned as having specific concerns with, while still managing under the Forest Plan. Alternative A shows the results of no management activities. We have two other alternatives that show more intensive levels of management because we have public comments that requested them and we have a Forest Plan that mandates some management. There is no doubt that this area is important to LLBO as a whole and many LLBO members specifically. This will be analyzed in the EA.)

37.10 Quality Assurance and Monitoring:

7. **Quality Assurance!** The members of the LICs want a quality assurance evaluation and monitoring method in place for all future projects. They are concerned that the results of harvest do not match the harvest prescription identified by the projects presented. Standards for the CIA would be created by, and based on, tribal needs for gathering and hunting in areas that have been harvested. Monitoring for QA must be conducted by a third party reviewer. When post-harvest standards do not meet LIC-created criteria for gathering and habitat, CNF would impose a fine to the loggers who "over-achieved".

(Forest Service Reply: We have and will continue to monitor the effects of our treatments, based on our Forest Plan. Monitoring results are discussed in our annual Monitoring and Evaluation Reports that are found on the Chippewa NF website. The Forest Service does monitoring of various types pre-treatment (data collection) and post-treatment. Some of the items monitored in the FY 2007 (PR# 192) and FY 2008 (PR# 239ee) reports have included blueberries, soil erosion, forest type composition and LEs, Tribal rights, annual timber harvest vs. the Forest Plan, selected wildlife species, and road closure effectiveness. The annual monitoring and evaluation reports from 2004 to present show the results of some of this monitoring. (PR# 73, 122, 145, 192, and 239ee) Anyone can

monitor our work by comparing our documentation with what they see on the ground. At this time, the Forest Service has no plans to enter into third party agreements to do monitoring.)

37.11 Riparian:

We also have concerns about timber harvest in stands adjacent to wetland and riparian emphasis areas. Harvest in riparian emphasis areas, under the current Forest Plan should only occur if it will enhance the function and aesthetics of the area. How can we be assured that this will happen? It appears that you are only trying to up your timber volume. In the case of wetlands all too often the buffers provided do not meet BMP standards, especially when any slope is involved. The obvious stands we noted (there maybe additional ones) in the proposal listed by Compartment and Stand include: 88/9, 88/23, 131/1, 129/31, 130/32, 78/2, 78/3, 125/5, 20//35, 12/7, 12/65, 12/12, 126/181, 11/160, 13/61, 13/57.

(Forest Service Reply: BMPs protect water and riparian areas and thus wild rice also. The Forest Plan on pages 2-11 to 2-15 talks about water quality and protection. Results from site monitoring of wetlands and riparian areas the last several years indicate FP S&G, BMPs are being followed (Monitoring and Evaluation reports from FY 2005 through 2008; also monitoring conducted by DNR). The EA analysis will look at these potential effects.

Most of the harvesting in riparian areas is being done with the express intent of enhancing the future stands by introducing long-lived conifers, especially white pine. The Forest Plan contains guidance for buffer strips, filter strips, and visual strips, which will be followed and monitored. Several of the stands in the above list are not treated stands in the KRM EA project. This will be discussed more in the analysis in this EA.

Proposed treatments in riparian areas are designed to maintain or enhance riparian function. Monitoring of riparian areas annually show that the forest has effectively implemented Forest Plan S&G and BMPs and protected water quality (Annual Monitoring and Evaluation reports). Results from site monitoring of wetlands and riparian areas the last several years indicate FP S&G, BMPs are being followed (Monitoring and Evaluation reports from FY2004 through 2008 (PR# 73, 122, 145, 192, and 239ee) (also monitoring conducted by DNR in PR# 71ba and 191a).

In the 2004 report (PR# 73), most of the guidelines were followed and there were no apparent sediment or erosion problems for the wetlands, but there were recommendations for better skid trail placement by a wetland.

In the 2006 report (PR# 145), there were two wetlands that had small areas with greater than 20% soil disturbance in the filter strips, but there was no evidence of erosion or sedimentation. Also a small vernal pool was skidded through, but the requirement was to protect some not all seasonal pools.

In the 2007 report (PR# 192), sale area boundaries were often inside the filter strips but mitigating measures prevented any impacts, riparian area harvest restrictions were met, and in two monitored harvest units the filter strip guidance was met (<5% soil disturbance, no driving in wetlands, no slash).

These reports focused on any problems that could be found rather than on the majority of the areas where things were done correctly.

Results of the monitoring by Minnesota Forest Resources Council for following the Voluntary Guidelines are a compilation of all agencies and private parties, so it is not a direct report of what the Forest Service is doing but does show some general ideas. The 2004 report (PR# 71ba) which was early in the implementation of the guidelines showed:

73% compliance with filterstrip guidelines,
52% compliance with RMZ guidelines

only 6% of approaches to wetlands had erosion and only half the time was sediment reaching water.

The second major monitoring by MFRC in 2004-2006 was designed to compare results to the 2004 report. The 2008 report (PR# 191a) showed:

Filter strip compliance went up to 96% instead of 73%.
RMZ compliance actually went down to 46% from 52%, but this may have been due to the tiny wetlands and streams that were violated - they would have been very hard to see if work was done in the winter.
20% of approaches to wetlands that needed erosion control structures showed erosion that led to sedimentation.
30% of skid trails showed erosion but only 0.5% of the time did sediment reach water.

We do not quantify the percentage of the time that we "manage riparian areas for riparian values" as opposed to just "doing management in the areas which does not negatively impact the riparian values", because there are often multiple reasons for doing a particular treatment.)

37.12 TES – Red Shouldered Hawk:

There are a number of stands where there is, or may be, the potential for sensitive, threatened, or endangered species (TES) issues. These include 129/87 where DNR data indicates a red-shouldered hawk nest on the edge of this stand. If this is case, the presence of red-shouldered hawks in stand 129/87 would also affect proposed activities in 129/66, and possibly other stands.

(Forest Service Reply: We have management guidance for TES species in the Forest Plan that we will follow. Particular types of mitigation will be listed in the EA and carried into the prescriptions for these species, when they are found.

Where TES species are of concern, the boundaries of harvest units and the type of harvesting will be determined by the TES species and location. This will be discussed more in the analysis in this EA. Stands proposed for treatments (and often adjacent habitat including Stand 129/87) were surveyed for sensitive species, but no red-shouldered hawks were found. The Forest Service has no records of a red-shouldered hawk (BULI) nest in the area, so is continuing with the harvest treatment as proposed in 1/129/87 in Alternatives B and C, but deferred in Alternative D. There are no activities planned in 1/129/66 in the KRM EA project. Did they mean 1/129/26, which is being treated? The same comments apply to it.)

37.13 Goshawk:

This project area contains plenty of potentially suitable northern goshawk habitat; however, goshawk territories have a high failure rate in this part of the forest and there was only one active nest during the 2009 nesting season. Despite high nest failure rates, Beltrami County Timber sale appears to be scheduled in both nesting and the post-fledgling zones of the Bass Lake territory. It appears the entire cut will occur completely within the Post Fledgling Zone for this territory and a portion of the nesting zone. At this time (prior to harvest), this stand includes the diverse structure and coarse-woody debris required to create good foraging habitat.

(Forest Service Reply: We have management guidance for TES species in the Forest Plan that we will follow. Particular types of mitigation will be listed in the EA and carried into the prescriptions for these species, when they are found.

What the county does on their lands is outside the scope of the KRM EA. The FS acknowledges the importance of highly quality habitat in goshawk nesting and post-fledging zones. The FS does not plan any harvest as part of the KRM EA project within these zones in the Bass Lake Territory. Harvest activities in goshawk habitat on county land will be analyzed for cumulative effects to goshawks.)

37.14 Collaboration:

Due to the degree of cross-ownership in this area and the complex habitat requirements of northern goshawks, it is imperative that county, state, tribal, and federal agencies work together on habitat protection and management. Lack of coordinated stand management that considers vegetation management at the landscape (as well as stand) level greatly increases the potential of this species "slipping-through-the cracks". The responsibility of thorough communication and coordination to protect, maintain, restore, and enhance suitable nesting, foraging, and fledgling habitat rests on the shoulders of the CNF. At this time, we recommend evaluating your proposed actions in conjunction with the other resource management agencies.

(Forest Service Reply: We do some coordination with other agencies, but we each have our own mandates and management guidelines.

We obtain data from the state and counties to determine what they are doing in the analysis area, so we can take it into account during our analysis.)

37.15 TES Plants:

There are several stands that should be evaluated for the potential impact to TES plant species. Stands 133/15, 133/59, 88/9 may support Botrychium mormo or have them near them.

(Forest Service Reply: We have management guidance for TES species in the Forest Plan that we will follow. Particular types of mitigation will be listed in the EA and carried into the prescriptions for these species, when they are found.

We do biological surveys, as necessary by our screening guidelines, for all of our treated stands. If there are TES plants in or near a stand, we rely on these surveys for information. Stands 1/133/15 and 1/88/9 were surveyed for sensitive species, but no Botrychium sp. were found. However as mentioned several times in the EA, 1-88-9 along with 6 other stands will be deferred in the Decision Notice because of Botrychium mormo (BOMO) or BOMO habitat. No treatment is planned in 1/133/59.)

37.16 Star Island Toilet - Archeological:

In previous projects that included Star Island in Cass Lake you have proposed to install toilets on Star Island near the carry-in access to Windigo Lake. These proposals have been denied by our Tribal Historic Preservation Officer due to ongoing archeological issues. Until these issues are resolved, this project should be deferred.

(Forest Service Reply: We are planning to resolve these issues at this time. There have been surveys of the proposed toilet location and there has already been some analysis of effects in the Cass Lake Vegetation EA back in 2003. A request to THPO on January 21, 2010 (PR# 381a) was answered on March 1, 2010 (PR# 428) with a concurrence that the project can go ahead "provided efforts are made to put this facility as far back as possible from the trail as not to interfere with cultural landscape.")

37.17 Tribal Communities and LIC Consultation:

This proposal outlines some timber harvest in the vicinity of a number of Tribal Communities. This will of course be of major concern to the tribal members who live there. When harvesting this close to tribal communities, we want assurance that the CNF consults with the local community members **and** directly utilizes their input. The Local Indian Councils (LICs) that are encompassed by this project include Mission Buck Lake, Sugar Bush, Pennington, and Cass Lake (fact check). Have you consulted with all of these communities and incorporated their input?

(Forest Service Reply: We have met 8 times with Cass Lake (2), Sugar Bush (4), and Cass River (2) LICs; and have attempted three times to meet with Mission LIC but unsuccessfully.

This EA will contain documentation of all LLBO comments received and will show how these comments were used, either in the response to comments of incorporated into the alternative development and effects analysis. Their comments were used to design Alternative D.)

37.18 Unique Biological Areas:

Under Forest Plan objective O-WL-31 the CNF is to "Enhance or restore **high-quality habitat** on a minimum of 20, (average 2 sites per year) known sites of sensitive plants." It is our understanding that the forest has not yet completed designation and management plans of any new high-quality habitat sites since the Forest Plan was established in 2004. The Kitchi Project includes several locations that would probably qualify for proactive management as high-quality sites; specifically, the lowland conifer bog south of Meadow Lake and the Flora Lake Bog Complex that is bisected by Beltrami County Road 20 (northwest, west, and south of Flora Lake).

(Forest Service Reply: There is no Forest Plan or Forest Service requirement for designation of new areas or management plans as mentioned in the comment. See the FY08 Monitoring and Evaluation Report on the Chippewa NF (PR# 239ee) website for a discussion about the special habitats (Scenic Byway, planting Canada yew, and a Goblin Fern study). In response to previous concerns in the Continental Divide EA, we took extra measures to protect Barrot's Bog, an undesignated area with TES plants.

These are apparently some of the State's High Biodiversity Areas that the county has surveyed over the last couple of years. The only proposed treatments near the Meadow Lake Bog area that LLBO listed are four wildlife openings that we are maintaining in an open condition. They total about 10 acres and are mowed every few years to reduce brush/tree encroachment. They have existed like this with minor treatments for decades. Considering the acreage involved, maintaining these four openings will result in negligible impact on orchids in the bog from deer browsing pressure. Keeping them in this open condition may actually help traditional gathering with the fruiting shrubs that can exist in open conditions and along the edges.)

37.19 Meadow Lake Bog:

The Meadow Lake Bog consists of a nice cedar, black spruce bog that supports 16 summer-blooming orchid species (See Table 2). Two of these are TES species and there is a high probability of two or three others. A spring survey targeted at detecting spring-blooming orchids would likely reveal additional species. The Meadow Lake Bog will likely rival the orchid list for the Pennington Bog Scientific and Natural Area, already designated and protected. We request that these areas be evaluated for protection under O-WL-31 and activities proposed on surrounding, and/or adjacent property, receive careful scrutiny and a broader view. For instance, creating "wildlife openings" within close proximity of Meadow Lake Bog (e.g. stands 129/60, 129/61, 129/62, 129/98) would directly and/or indirectly increase deer browse within the bog, and in turn negatively impact orchid populations.

Meadow Lake Bog Complex	Meadow Lake Bog Complex - EAST
Amerorchis rotundifolia	Amerorchis rotundifolia
Arethusa bulbosa *	Calypso bulbosa *
Calopogon tuberosus *	Corallorhiza striata
Corallorhiza trifida	Corallorhiza trifida
Cypripedium acuale	Cypripedium calceolus
Cypripedium calceolus	Cypripedium reginae
Cypripedium reginae	Goodyera repens
Goodyera repens	Listera cordate
Listera cordate	Malaxis unifolia
Malaxis monophyllos *	Platanthera hyperborea
Malaxis unifolia	Platanthera obtusata
Platanthera hookeri	Platanthera orbiculata *
Platanthera dilatata *	
Platanthera obtusata	*=Rare species of unique find
Pogonia ophioglossoides *	

Flora Lake Bog Complex
Amerorchis rotundifolia
Calypso bulbosa *
Calopogon tuberosus *
Coeloglossum viride
Corallorhiza trifida
Cypripedium arientinum *
Cypripedium acaule
Cypripedium calceolus
Cypripedium reginae
Goodyera repens
Liparis loeselii
Listera cordate
Malaxis monophyllos *
Malaxis unifolia
Platanthera hyperborea
Platanthera obtusata

Table 2. Unique orchids located within high diversity bogs of the Kitchi Project Area to be considered for Unique Biological Area designation.

(Forest Service Reply: These are apparently some of the State's High Biodiversity Areas that they surveyed over the last couple of years. We are not proposing activities that would affect this bog area. The wildlife openings are existing openings along the Meadow Lake hunter walking trail that are simply being kept in a grass/forb condition. They have existed for decades and been mowed periodically. They are four small openings that total only 10 acres so should result in negligible impact on orchids in the bog from deer browsing pressure. We follow Forest Plan guidance for protection of TES species and wetlands. This information will be kept for consideration in the next Forest Plan revision.)

37.20 Flora Lake Bog Complex:

The Flora Lake Bog Complex also contains numerous orchid species. In the 2009 field season 16 summer-blooming species were found this past summer (see attached table). Three TES species were also found in this bog with the possibility of an additional rare species, Malaxis paludosa. Both of these areas warrant serious

considerations for proactive protection and enhancement under O WL 31. One of the old growth red and white pine stands currently proposed for harvest (137/52) is located along the northeast side of the Flora Lake Bog. Not only should this stand be deferred due to its use by tribal members, but it also serves as a buffer for this bog.

Meadow Lake Bog Complex	Meadow Lake Bog Complex - EAST
Amerorchis rotundifolia	Amerorchis rotundifolia
Arethusa bulbosa *	Calypso bulbosa *
Calopogon tuberosus *	Corallorhiza striata
Corallorhiza trifida	Corallorhiza trifida
Cypripedium acuale	Cypripedium calceolus
Cypripedium calceolus	Cypripedium reginae
Cypripedium reginae	Goodyera repens
Goodyera repens	Listera cordate
Listera cordate	Malaxis unifolia
Malaxis monophyllos *	Platanthera hyperborea
Malaxis unifolia	Platanthera obtusata
Platanthera hookeri	Platanthera orbiculata *
Platanthera dilatata *	
Platanthera obtusata	*=Rare species of unique find
Pogonia ophioglossoides *	

Flora Lake Bog Complex
Amerorchis rotundifolia
Calypso bulbosa *
Calopogon tuberosus *
Coeloglossum viride
Corallorhiza trifida
Cypripedium arientinum *
Cypripedium acaule
Cypripedium calceolus
Cypripedium reginae
Goodyera repens
Liparis loeselii
Listera cordate
Malaxis monophyllos *
Malaxis unifolia
Platanthera hyperborea
Platanthera obtusata

Table 2. Unique orchids located within high diversity bogs of the Kitchi Project Area to be considered for Unique Biological Area designation.

(Forest Service Reply: We are not proposing activities that would affect this bog area. This stand is being thinned which normally results in little or no impacts to adjacent stands. We follow Forest Plan guidance for protection of TES species and wetlands. This information will be kept for consideration in the next Forest Plan revision.

Compartment 137 Stand 52 is immature jack pine not old red/white pine, although there are some old trees in the stand. We are cutting close to the Flora Lake and Meadow Lake Bog High Biodiversity areas, but not in them. Our treatments are not expected to affect the bogs directly or indirectly. This will be analyzed in the EA.)

37.21 Bass Lake Road Closure:

We are please you will be addressing the problems with the Bass Lake Road.

(Forest Service Reply: We will consider this during the analysis.)

37.22 Enhancement Opportunities:

Additionally, we hope that you will also implement some of the many other enhancement opportunities that are outlined in the Forest Plan for Unique Biological Areas such as the Gilfillan Area which is rich in history and wildflowers. These are outlined in D-UB-1 to D-UB-9 and O-UB-1 to O-UB-3, and S-UB-1 to S-UB-6. Grandpa's Point Unique Area--an old fish camp warrants similar consideration. These areas are in need of some protection and will help you meet social and biological obligations required by the Forest Plan.

(Forest Service Reply: We follow Forest Plan guidance within Unique Biological Areas. Grandpa's Point is part of the Unique area along the Mississippi River. The Unique Biological ... Management Areas are primarily managed for interpretive purposes, as well as protection of their values.

The KRM EA has a proposed action and alternatives that includes selected activities. The requested projects in Comment 37.22 go beyond the scope of the activities we wanted to include in this project.)

37.23 Final:

We appreciate your attention to our issues and look forward to continued dialog about this project.

(Forest Service Reply: We will consider this during the analysis.)

38. Sierra Club-North Star Chapter (Annah Gardner and Lois Norrgard) – electronic letter – 12/23/2009 (PR# 343)

38.1 Restoration Goals:

The Sierra Club would like to see a focus on restoring conditions more representative of native vegetation communities. How does the Agency plan to carry out this goal? How will native vegetation be fostered through project activities? How does this project further restoration goals described in the Forest Plan? The Sierra Club supports planting efforts proposed in this project.

(Forest Service Reply: Treatments in the project area are designed to move us closer to the diversity desired by the LE and MIH goals in the Forest Plan (Pages 2-21 to 2-23). Prescriptions are designed to increase species diversity within stands by the choice of reserve trees, by leaving reserve trees, and by increasing components of some species, especially white pine. All of these questions will be answered in the Chapter 3 analysis for the EA.)

38.2 Patches:

The scoping letter mentions that there are six large and mature upland forest patches greater than 300 acres that are either in or partially in the project area (8). Where are these patches located and what type of harvesting activities are planned within them? Large mature patches should be left intact and not further fragmented.

(Forest Service Reply: There is Forest Plan guidance for managing large and mature upland forest patches that will be followed and will be part of the analysis in this EA. Actually there are 9 patches >300 acres in the KRM project area. Harvest treatments within patches could include thinning, individual tree selection, group selection, 2-aged shelterwood, and even-aged regeneration harvests. Harvest treatments that maintain at least 50% canopy cover within these patches result in no reduction in patch size, number, and acres. This will be discussed in the Wildlife section of the EA. Due to forest aging, the proposed action results in the creation of an additional very large patch (1001-2500 acres).)

38.3 Old Red and White Pine:

The scoping letter mentions that there are several large old red and white pine stands that would benefit from under-burning, but this will not happen under Alternative B because of the damage it will cause to the timber (15). Are these areas slated to be cut?

(Forest Service Reply: These old red and white pine stands are in the suitable timber base so at some time would be eligible for harvesting, however at this time there are no other treatments proposed in them. There are other old red and white pine stands that will be harvested. This will be found in the Vegetation or Wildlife sections of this EA.)

38.4 Water Quality:

The Sierra Club is concerned with how harvesting will affect soil and water resources, especially considering the large amount of water bodies in the project area. When clearcutting takes place on steep slopes, soil erosion can occur. Clearcutting can also lead to soil compaction and loss of soil nutrients. Harvesting can lead to channel scouring and instream erosion. There is also a concern with effects on watersheds containing areas that have young and open age-classes, where spring snowmelt can result in channel scouring, flooding, erosion, sedimentation and harmful effects on fish and aquatic habitats.

(Forest Service Reply: All of the factors mentioned in the comment are considered in the prescriptions and in the effects analysis in this EA (water quality, erosion, compaction, nutrients, and young/open conditions). The analysis of these factors will be found in the Water Quality and the Soils sections of this EA.

The land in the KRM EA area is relatively flat. Eighteen percent slope is considered steep. Even 18% is relatively uncommon in the area, being primarily short slopes near water. These are protected by BMPs.

BMPs protect water and riparian areas. The Forest Plan on pages 2-11 to 2-15 talks about water quality and protection. Results from site monitoring of wetlands and riparian areas the last several years indicate FP S&G, BMPs are being followed. See the response to Comment 37.11 for a detailed look at monitoring results.)

38.5 Pennington Bog:

The Sierra Club is concerned that planned harvesting may harm Pennington Bog. Harvesting should not occur near or upstream from the bog. Is this the only bog located in the project area?

(Forest Service Reply: There are numerous bogs and wetlands in the KRM EA area. There is some thinning and wildlife opening maintenance proposed north of the Pennington Bog. We follow Forest Plan guidance to protect or manage Pennington Bog and other bogs. Bogs are defined as having a disconnected water table (raised ground) and being quite acidic, as opposed to other "wetlands".)

38.6 Stream Crossings:

The Sierra Club urges the Forest Service to prioritize stream crossing improvements so as to decrease the amount of sedimentation into streams. Also, for the benefit of aquatic species, culverts should be removed wherever possible.

(Forest Service Reply: Stream crossing activities were in the Purpose and Need for the KRM EA area in the scoping letter, but no specific projects are in the Proposed Action.)

38.7 NNIP:

The Sierra Club supports plans to control the spread of non-native invasive species. Are there other areas other than the planned 29 acres that would benefit from treatments?

(Forest Service Reply: The Forest is in the process of doing a forestwide NNIP Management EA. The NNIP treatments will be dropped from the KRM EA; allowing all NNIP control to be covered by the Forest-wide NNIP Management Project EA, which will be much more intensive and have a more complete analysis of effects.)

38.8 Gravel Pits:

The Sierra Club is pleased that a gravel pit will be rehabilitated back to a vegetated area. Are there any other gravel pits within the project area that are no longer being used?

(Forest Service Reply: There is one other known gravel pit in the project area that needs closure (Turtle River Pit west of Hales Road); however it was not surveyed for this project analysis.)

38.9 Bass Lake Access Road:

The Sierra Club believes that the Bass Lake road should be properly closed so that motor vehicles can no longer access it. It is a shame that ATV's have been trespassing and damaging the area for so long because of unsuccessful attempts to close the road.

(Forest Service Reply: This comment will be considered in the analysis.)

38.10 Winnie Campground Road:

The road into the Winnie Campground should also be effectively closed.

(Forest Service Reply: This road closure is really just maintenance of an existing closure so will be dropped from this analysis rather than confuse this document with all the extra analysis and documentation. It is a very minor maintenance.)

38.11 Road Decommissioning:

Are there any other opportunities to close roads in the project area?

(Forest Service Reply: Road decommissioning was considered in the previous EAs written for this area. See Comment 33.3 response for more discussion of road decommissioning.)

38.12 Temporary Roads:

The Agency has not been successful in decommissioning roads that are supposed to be closed. For this reason the Sierra Club opposes the building of new temporary roads, because they are not really temporary, rather they can remain for up to 10 years and even then are often not properly closed. This can lead to damage to soil and water resources and wildlife species.

(Forest Service Reply: The proposed temporary roads are very short spurs (0.75 miles total for 7 roads) necessary to reach harvest units. These will not have established use patterns so will be relatively easy to effectively close and keep closed.)

38.13 TES and Sensitive Species:

The scoping letter mentions maintaining suitable wildlife habitat, but are there any plans to improve wildlife habitat, especially for sensitive species? The Sierra Club is concerned with how project activities conducted close to bald eagle nests may impact this species. How does the Agency plan to protect bald eagles, northern goshawks, red-shouldered hawks and other sensitive species? Does the Agency have accurate population data and nest site locations for sensitive species in the project area?

(Forest Service Reply: These concerns will be discussed in the analysis in this EA. There is Forest Plan guidance that will be followed. Design features and mitigating measures will be used, as needed, to protect these species.

Sensitive species and their habitat are protected per direction in the Chippewa NF's Forest Plan. Proposed treatment units are surveyed for sensitive species. The information collected from these surveys is used to develop the proposed action and associated mitigation measures. These design features or mitigating measures are designed to minimize or eliminate potential effects to sensitive species.)

39. Bob Rich - telephone - 1/12/2010 (PR# 370 and 371)

39.1 Bio-control insects:

He wondered when the decision would be made. He wanted a list of the bio-control agents that we are proposing to use. He wants to see if there are more insects available than we are mentioning. There is a new

one for garlic mustard that is just coming out. He sells bio-control insects, so is quite up to date on the availability and uses of them.

(Forest Service Reply: This dealt with NNIP control projects, which have been dropped from this EA and will be analyzed in the Forestwide NNIP EA.)

40. Sugarbush LIC - Meeting Notes - 01/12/2010 (PR# 375)

40.1 General:

Sugarbush LIC Meeting held at Palm Room in the Palace Hotel in Cass Lake at 6:00 pm. It was moved here due to the high interest in this meeting and the large anticipated attendance. The whole meeting focused around the Kitchi EA project and Trust Responsibilities.

(Forest Service Reply: The discussion in Comment 40 is primarily the same as in Comment 37. That comment and letter resulted from DRM discussions with the Sugarbush and Mission LICs, so all comments from that meeting have been discussed previously. Tonight's Sugarbush LIC meeting simply expands on the comments in the letter, adds a few more specific stands, and emphasizes how important the land and the traditional resources and uses are to the LLBO members.)

40.2 Government to Government Talks:

The Band is special and needs to be treated on a government to government basis, unlike other organizations, people, and agencies. We are not the public. Was the Tribal Council informed about this project? Sugarbush sends their meeting notes to the Council. From the discussion, it appears that the planning/decision process within the tribal government is:

The LICs make a recommendation/decision, which they give to the Tribal Council who then formulate it into a signed Tribal Position Statement. This statement or any concerns/problems are forwarded on to the DRM who then formulates a letter to us. This is where the Scoping Letter Response came from in December (after DRM meetings with Sugarbush and Mission LICs.

(Forest Service Reply: We appreciate knowing this process. We do recognize that the Band is special and thus have more and earlier meetings, discussions, and letters with them than with any other agency, organization, or person. Any time that the Forest Service proposes a new policy or proposes activities that could affect the Band, we obtain tribal input.)

40.3 Do No Harvesting:

The chairman began the discussion with the statement that "Our decision is that all stands should be left as they are in all of the Kitchi area." Most of the following comments build on this statement or respond to it.

(Forest Service Reply: It is good to know the LIC's position. Our proposed action follows the Forest Plan, which takes a different position. Alternative D responds to most of the tribal concerns. Alternative A does no harvesting or treatments so would probably be what the chairman desires.)

40.4 Quality of Life:

The Scoping Letter Response came after a lively meeting with a lot of discussion between the DRM and Sugarbush/Mission LICs. The stands mentioned in it and the ideas put forward in it are well thought-out and the firm beliefs of the members involved. The 30 specifically mentioned stands are the most important but the discussion of Quality of Life encompasses the whole Kitchi EA area. There are a lot of native villages in or near the KRM EA area (Mission, Flora Lake, Pennington, Buck Lake, etc.). The National Forest is overlaid on historic tribal lands and on the reservation. A large percentage of the Band members living in this area have not moved far during their lives and have a great attachment to their ancestral lands. They have grown up with the land as it was and as it has naturally changed around them. This is their home. This area is heavily used for traditional resources. Many stands are also used by the local schools as outdoor laboratories/learning centers. A sugarbush area by Big Lake is used by the schools. Little Rice Lake is where many children learn about ricing.

The real difference in our viewpoints (between a sportsman or recreation visitor and a native) is an economic one. For the sportsman/visitor the activity is fun; for the native the activity is a lifestyle/sustenance. Looking at the land cannot be "one size fits all".

We do not feel that the Forest Service teams on these projects are treating us with the proper respect. As a government, we should be visited by "leadership" personnel, e.g. the Forest Supervisor, not just the District Ranger or an ID Team member.

(Forest Service Reply: We recognize the importance of quality of life (hunting, fishing, gathering, spiritual values, etc.). For the Band it is very tied to these stands and this area. There is also a quality of life issue for other members of the public. Some of this is the same as yours and some is quite different. We think everyone recognizes the need to manage the Forest; we disagree on the type of management and the intensity. Doing nothing is seldom an option, because the forest continues to change and will grow out of the condition that is important at this time.

We are quite willing to defer treatments in stands that have special values (spiritual, traditional resources, etc.) but have to also recognize the need for other values in other stands.

We do treat the Band differently, recognizing the government-to-government relationship. We meet with the Band several times in the planning process and specifically ask for all of your input on a stand-by-stand basis. With other groups and agencies, we talk to them and send them various public involvement documents (letters, etc), but not at the same level of intensity. The Forest Supervisor has and will be involved at a higher level of planning than the individual project, which is typically handled by the ID Team level personnel.)

40.5 Trust Responsibility:

You need to remember that in the treaties, the Band or its members gave up some rights to selected pine and to selected lands, BUT they did NOT give up their rights to traditional gathering and traditional resources. Why won't you support our decision of doing no harvesting, to protect these traditional values? We know that something needs to be done to conserve these resources and keep them present, but not as intensively or as much as the Forest Service is proposing. You need to be "light on the land". Respect our personal lives. Your treatments are just "on the Forest" for you but they are in our backyards and will affect our homes, area, and lives for a long time.

This is a maternal thing - caring for our backyard. Birds and animals are our friends. We depend on each other for our lives, homes, and subsistence. Disturbances near our homes and on our reservation should be by us, not by outsiders.

(Forest Service Reply: This will be analyzed in the EA. Alternative A does no treatments, so does not actively affect traditional gathering. Alternative D defers many treatments from the Proposed Action in response to tribal concerns. We do recognize the Band as special and try to obtain comments from it to mold our management, however as said previously, some land management is needed to meet Forest Plan goals and objectives.)

40.6 Return Intervals are too Short:

Look at the cumulative effects of your intensive management on the whole ecosystem of a stand or the whole area. You are not allowing enough rest between harvests for the stands or the landscape to recover as truly functioning ecosystems. There are reasons to harvest but they must be well thought-out.

(Forest Service Reply: This will be analyzed in Chapter 3 of the EA.

Our project areas are large; this one is 81,000 total acres. Generally treatments occur on 7-12% of National Forest lands in a given project. The cumulative effects analysis in Chapter 3 incorporates the effects of past activities not only on National Forest lands but county and state lands as well, as well as Tribal and private lands when they are known.)

40.7 Forest Plan:

We appealed the Forest Plan because we did not think it dealt fairly with our use of and need for traditional resources and did not fulfill the Forest Service's Trust Responsibilities. We lost the appeal but still do not agree with the management under the Plan. What we are saying tonight is about the Forest Plan but also specifically about the Kitchi EA area. There needs to be more addressing of "social justice issues".

(Forest Service Reply: Much of the disagreement circled around the Forest Plan. The DRM and LIC do not agree with the Forest Plan and do not feel that it adequately addresses their concerns. They appealed the FEIS for the Plan, but the decision was upheld. They are not willing to accept its direction, since they feel that it does not correctly and fully implement the Trust Responsibilities assigned to the Forest.

A revision of the FP or amendments to it are outside the scope of this project. However, the Forest Service is committed to working with LLBO to address and incorporate as many of the tribal concerns as possible while still trying to achieve resource objectives and providing forest products.)

40.8 Wild Rice:

Management needs to be done in ways that protect or enhance wild rice lakes and streams.

(Forest Service Reply: Effects to water quality and wild rice will be analyzed in the Water Quality and the Traditional Resources sections of the EA.

BMPs protect water and riparian areas and thus wild rice also. The Forest Plan on pages 2-11 to 2-15 talks about water quality and protection. The EA analysis will look at these potential effects.)

40.9 Kitchi Lake Access:

We need access to Kitchi Lake along with the river through Little Rice and Big Rice Lakes. We would prefer a small and isolated landing similar to the one on Andrusia Lake. We are more comfortable using landings where there is not a large public pressure. However, the main thing is that we need a public access to this area. The closest one now is Knutson Dam landing which is a long ways away.

(Forest Service Reply: There are a few spots that might work that we discussed at the meeting. This may be a future consideration for the Forest but will not be part of this project.

Burnt Bridge would be ideal if it was in public ownership so always available.
North of Burnt Bridge in Big Rice Lake - NO - the access road is very marshy.
South of Burnt Bridge in Little Rice Lake - NO - the access road and area is very marshy.
Comp 22 on peninsula (east side) - NO - this is steep ground.
Comp 22 on peninsula (west side) - MAYBE - the southern part of this bay is very shallow and often choked with weeds, but farther north may be okay.
Comp. 21 Stand 1 - MAYBE -
Comp 21 Stand 2 - MAYBE - but most of this area is quite swampy/marshy.)

40.10 Kitchi Lake Access:

The Forest Service should acquire the private land on either side of the Turtle River at "burnt bridge" on FR 3448. This would give Band members access to a highly used ricing area both up and downstream of the crossing. This was the historic access to the river and lakes until the County abandoned this part of the road, the bridge was removed, and the private landowner blocked the road with posts. The landowner is a willing seller.

(Forest Service Reply: We will see what our options are for purchasing or acquiring land like this. If acquired, an access may be considered. Acquisition is outside the scope of this project.)

40.11 Traditional Resources in Specific Stands:

Some stands from the Scoping Letter Response were specifically discussed. Hunting and gathering traditional plants is a well-established use in Comp 128 Stands 14, 18, and 48; Comp 137 Stand 7; and Comp 140 Stands

9, 11, and 13. He added Comp 34 Stand 29 to this list. There are at least 25 permanent, tribal deer stands in this location. Comp 34 Stand 19 was specifically left out of this list.

(Forest Service Reply: From the discussion, it sounds like harvesting in any of these stands would be highly opposed and they should be deferred from at least one alternative. Seven of these 8 stands were deferred in Alternative D. Three were deferred in Alternative C. One stand was dropped in all alternatives. Stand 1/128/18 was retained in all alternatives except the No Action Alternative because it is a thinning. However this thinning was modified in Alternatives C and D to be less impactive.)

40.12 Traditional Resources in Specific Stands:

Comp 140 Stand 13 is old aspen but is a historic hunting and gathering site. Even knowing that the aspen was overmature and soon becoming decadent or falling, the member felt that leaving the stand was the proper prescription.

(Forest Service Reply: This is a typical case where our Forest Plan and normal silvicultural prescriptions conflict with the management desired for traditional gathering and use. We developed an issue in response to such tribal concerns that were raised. Alternative D was designed to incorporate many of the concerns raised by LLBO.)

40.13 Traditional Resources in Specific Stands:

Comp 140 Stand 11 is a historic hunting stand with little public pressure. Doing a thinning with rows cut to allow machinery would create shooting lanes that would encourage many more people to hunt there.

(Forest Service Reply: This will be analyzed in the EA in the Traditional Resources section. At the least we will prescribe a design feature for the thinning so the rows are not straight.)

40.14 Edge Effect/Deer:

Much of your harvesting is designed to create edge effect for wildlife, e.g. deer. You have more than enough of this habitat between past cutting and natural marshes and other openings. More edge and young timber encourages higher deer populations, which can have a negative effect on TES species from browsing.

(Forest Service Reply: This will be analyzed in the EA in the Wildlife section.)

40.15 Private Land:

One member encountered a survey crew contractor near her home. The information she got from him about what he was doing and who he was, did not satisfy her.

(Forest Service Reply: When working within the reservation, especially this close to Band members' homes, we need to be more forth-coming and helpful in our explanations.)

40.16 Previous Cutting not Desirable:

Members pointed to a couple of stands near Flora Lake that they did not like. The cutting had been too disruptive and the traditional gathering opportunities changed too much. They assumed that our future projects in the area would look like that. Our explanation did not satisfy them because there would still be disruption of the landscape near their homes.

(Forest Service Reply: Our desired condition in these stands had been reached, however, it was not what they desired. The one stand was a shelterwood cut, whereas we are proposing a thinning in the adjacent stands; so the results would be quite different.)

40.17 Compensation/Discrimination:

They expressed a mistrust of our ability or intent to follow through on what we say. They mentioned the prescribed burn that escaped near Ball Club a few years ago, where they felt adequate compensation was not forth-coming. One member mentioned cutting in two years near his land, where a non-Band member's tree stand was retained in a harvest unit one year, then the next year two of his stands were destroyed in the adjacent harvest unit. He has not received compensation for them. He felt this was deliberate discrimination.

(Forest Service Reply: Information on compensation and the status of the claims is not currently available to us on the Forest. We are not in a position to assist you with those concerns. It is quite possible that the difference between the retention and destruction of the tree stands was at that

juncture of policy change that occurred recently. The destruction of the stands may have occurred in the first year of the new policy. The current policy on tree stands on NFS lands is that the general public is not allowed to have tree stands. Tree stands will be dismantled and removed. Tribal members may have tree stands on NFS lands but are required to have a permit attached to the stand, so we know that it is tribal. In the absence of the permit, as with the general public, their stands will be removed.)

40.18 Forest Plan, Climate Change, NNIP:

We (LIC and DRM) have an ecological concern over the proposed management in Kitchi EA and under the current Forest Plan. When will you re-evaluate the Forest Plan goals vs. new issues such as climate change and worldwide NNIP problems. The Forest, as it is, is a vast carbon sink which is needed now.

(Forest Service Reply: The Chief of the Forest Service just issued a Notice of Intent (NOI) for new Planning Regulations (how we do Forest Plans) that we anticipate will be in effect at the time of our next FP revision. The intent of these planning regulations is to incorporate new information and new issues such as climate change and biomass (PR# 332 and 332a). It is expected that this will take 1 to 3 years. Neil Peterson, our Tribal Liaison, met with the Tribal Council and sent the NOI to the Executive Director (Randy Finn).

Our Forest Plan revision was completed in 2004. It is anticipated that revision would occur every 15 years, which would be about 2020.)

In the meantime, our Forest Plan direction for moving toward increased diversity in amounts, conditions and patterns of vegetation (Vegetation Desired Conditions Forest Plan pp 2-41 and 2-22) will result in forests that are more resilient in the face of potential climate change, with a mix of species adaptable to a variety of potential conditions. Projects designed to restore the health, resilience, and productivity of forested ecosystems may also improve the capability of the stands or landscape to withstand climate change stresses. Projects such as thinning overstocked stands, thinning to alter species composition, fuels reduction, and prescribed fire serve to restore ecological health and resilience in the face of future stressors. Not taking action to improve ecological health will likely result in lower carbon capture and storage (carbon sequestration) and increased carbon emissions in the future as the result of wildfire, and losses from insects and disease.

As long as growth exceeds removals, the forest is sequestering carbon. A 2004 report by the Union of Concerned Scientists (http://www.ucsusa.org/publications/catalyst/fa04-catalyst-forest-carbon-sequestration.html) stated that; "Even a forest that undergoes regular harvesting can act as a carbon sink as long as yearly growth exceeds the amount of carbon removed during harvest." In Minnesota, the "Overall net growth for all species continued to outpace harvest levels. According to 2007 FIA figures, annual net growth of growing stock on timberland was approximately 5.8 million cords and net mortality of approximately 3.10 million cords." (Minnesota's Forest Resources, December 2008, p. 3.).

Rationale for not including an extensive discussion on climate change in the 2004 Forest Plan revision process still applies today:

> *"…the level of uncertainty about possible climate change effects on Minnesota forests, or the overall role of our forests in influencing climate change (e.g. via carbon sequestration, etc.), is still too great to provide a firm foundation for proposing broad-scale changes to vegetation or forest practices." (Forest Plan, FEIS, App. J, pp. J-103 through 104).*

The Forest Plan currently provides us with a strategic framework that allows us to respond to the potential effects of climate change and NNIP problems experienced on the Chippewa National Forest.)

40.19 Forest Plan not Flexible:

We see you following the Forest Plan and always saying that "we cannot do something or we must do something because of the Forest Plan". This does not satisfy us, because we feel that the Plan is wrong. The Forest Service is like a huge boat that is hard to turn. President Obama has expressed the need for more consultation and more flexibility in coordinating with Tribes. You need to seek out the most flexibility that you can find in your management in order to meet the needs of traditional gathering.

(Forest Service Reply: Most of the Kitchi EA area is in the Forest Plan as "Leech Lake Band of Ojibwe Areas of High Interest", so will receive more consideration for that. We are now half way through the 1st Decade of the Forest Plan so may be doing a monitoring report on how we are progressing.

For more discussion on this comment, see the reply to Comment 40.7.)

40.20 Maps:

Ed Fairbanks and Shirley Beaulieu both requested large scale copies of the activities maps.

(Forest Service Reply: I gave them the two copies of the map that I had with me to this meeting.)

40.21 Completion Date:

When will the EA be completed?

(Forest Service Reply: We are hoping to complete the analysis and have an EA by June, with a decision in August or September after the last surveys are completed on some added stands. The 30 day public comment period will probably by in June to July.)

41. Blair and Sando - email - 01/15/2010 (PR# 378)

41.1 Add to Mailing list:

Add the following names to the Kitchi EA mailing list: Elizabeth Blair and Phil Sandro, 1676 E. Sore Drive, St. Paul, MN 55106

(Forest Service Reply: They will be added to the next mailing)

42. John Noehring - Beltrami County - telephone - 1/18/2010 (PR# 379)

42.1 Andrusia Boat Landing Parking Lot:

There are no legal requirements for signage or construction for such a parking area. However a county permit is required for the entrance onto the highway. The county maintenance foreman will decide if site distance is adequate and if a culvert is needed. The county engineer will determine if signage is needed or if a crosswalk is appropriate. Doing them could lead to liability or driver complacency if they see signs all year but few people.

(Forest Service Reply: This will be part of the prescription for this project. This information is also presented in Comment 36.4)

43. Leonard S. Rice (Star Island Protective League) - letter - 2/11/2010 (PR# 407)

43.1 Star Island Toilet:

The Star Island Protective League supports the construction of the toilet facility. In recent years, the north shore of Star Island has become a location where large groups of boats (sometimes in excess of a hundred) queue up, especially during the period from July 4th through Labor Day. The resulting traffic on the narrow strip of land between Cass Lake and Lake Windigo results in severe environmental stress. Lack of waste facilities is a significant problem - the area becomes strewn with toilet paper and human waste. It is unsanitary and unappetizing, and encroaches upon the ability of other persons to enjoy the national forest. Waste facilities definitely need to be installed.

(Forest Service Reply: We will take this information into account during the analysis and decision.)

43.2 Windigo Portage:

While the Star Island Protective League supports the construction of additional toilet facilities, we believe such a response is too limited in nature. The larger problem is that more people and boats congregate in a small area than can reasonably be supported. Opportunities for boating under the influence, littering, underage drinking, and abuse of natural resources abound. Accordingly, the Star Island Protective League also strongly supports the imposition of a limitation upon the number of boats allowed to congregate at this site.

(Forest Service Reply: While we agree that this area receives an extremely large amount of use, controlling this use is beyond our ability. The beach where the boats land and are parked is below the ordinary high water mark so is under State control. There is no logical/feasible method of limiting the number of people who go from their boats onto the Windigo Portage or use the trails. It is public land that is freely open to use. It just happens that a lot of people in very small groups want to use this land. A group size limitation would have essentially no effect.)

44. LLBO THPO (Gina Lemon) - telephone to SO - 2/22/2010 (PR# 417)

44.1 Star Island Toilet:

This project is now part of the Kitchi EA. Should put the toilets back farther from the inlet. Gina has not answered the Kitchi letter yet.

(Forest Service Reply: We will wait for the final letter from THPO to make a decision on toilet placement (as now prescribed by Comment 45).)

45. LLBO THPO (Gina Lemon) - letter - 3/1/2010 (PR# 428)

45.1 Star Island Toilet:

... provided efforts are made to put this facility as far back as possible from the trail as not to interfere with cultural landscape.

(Forest Service Reply: Within the bounds of the heritage resource surveys conducted and the physical conditions at the site, we will place the toilet as far from the trail as feasible.)

APPENDIX D: ALTERNATIVE MAPS AND SPREADSHEETS

Alternative C Maps (in Chapter 1)

The Alternative C maps are located in Chapter 1 along with the proposed action description and are not repeated here. Leo

(Larger scale maps showing all of these stands are found in the project record. (PR# 383a04, 383a05, 383a06, 383a12, and 282a13)

Map App. D-1 - Alternative C Harvest

Map App. D-2 - Alternative C Site Preparation

Map App. D-3 - Alternative C Regeneration/Riparian Planting

Map App. D-4 - Alternative C Wildlife

Map App. D-5 - Alternative C Other

Map App. D-6 - Alternative C Fuels/Ecosystem Burning

Table App. D.1 - Alternative C Prescriptions

(Larger scale maps showing all of these stands are found in the project record. (PR# 383a04, 383a05, 383a06, 383a12, and 282a13)

Dist	Alt_C Comp	Stnd	Treat Acres	Plant acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildlife	Fire	Other Project	Riparian
1	68	4	3.1	3.1	99	0		0	0	0	0	0	6131	0	0	0
1	68	7	1.5	1.0	99	3	Convert WP_1	0	0	0	4470	4511, 4560	0	0	3315 Canoe Road	5510
1	68	14	0.9	0.9	99	0		0	0	0	0	0	6131	0	0	0
1	78	3	17.5	17.5	91	91		1955	4193	0	0	0	0	0	0	0
1	78	7	27.1	27.1	91	91		1958	4102	0	0	0	0	0	0	0
1	78	15	0.1	0.1	99	0		0	0	0	0	0	6131	0	0	0
1	78	20	8.9	8.9	91	91		1955	4193	0	0	0	0	0	0	0
1	78	29	6.0	8.3	91	91		1958	4102	0	0	0	0	0	0	0
1	78	38	19.2	19.2	92	89	Convert NH	1935	4193	0	0	0	0	0	0	0
1	78	54	1.2	1.2	91	91		1958	4193	0	0	0	0	0	0	0
1	78	55	5.1	5.1	95	95		1958	4102	0	0	0	0	0	0	0
1	78	56	8.0	8.0	95	89	Convert NH	1954	4193	0	0	0	0	0	0	0
1	78	57	8.7	8.7	91	89	Convert NH	1955	4193	0	0	0	0	0	0	0
1	78	68	1.1	1.1	98	0		0	0	0	0	0	6131	0	0	0
1	78	77	2.8	2.8	91	89	Convert NH	1955	4193	0	0	0	0	0	0	0
1	79	39	0.7	0.7	99	0		0	0	0	0	0	6131	0	0	0
1	79	63	0.2	0.2	99	0		0	0	0	0	0	6131	0	0	0
1	82	67	0.4	0.4	99	15	Convert TA_elm_oak	0	0	0	0	4511	6080	0	0	0
1	82	70	1.4	1.4	99	0		0	0	0	0	0	6131	0	0	0
1	82	71	1.6	1.6	99	0		0	0	0	0	0	6131	0	0	0
1	82	77	0.3	0.3	99	15	Convert TA_elm_oak	0	0	0	0	4511	6080	0	0	0
1	82	78	0.5	0.5	99	15	Convert TA_elm_oak	0	0	0	0	4511	6080	0	0	0
1	83	9	3.6	3.6	99	15	Convert TA_elm_oak	0	0	0	0	4511, 4560	6080	0	0	0
1	83	19	44.4	44.4	82	0		1916	0	0	0	0	0	0	3315 - Bass	0

Dist	Alt_C Comp	Stnd	Treat Acres	Plant acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildlife	Fire	Other Project	Riparian
															Lake Road	
1	83	31	0.7	0.7	99	15	Convert TA_elm_oak	0	0	0	0	4511, 4560	6080	0	0	0
1	85	40	0.9	0.9	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	86	19	23.1	23.1	91	0		1965	0	0	0	0	0	0	3315 - Temp Road	0
1	86	21	16.9	16.9	2	2		1961	4220	0	0	0	0	0	0	0
1	86	27	11.8	11.8	91	91		1965	4102	0	0	0	0	0	0	0
1	86	28	3.4	3.4	3	3		1940	4220	0	0	0	0	1220	0	0
1	86	31	58.3	58.3	16	16		1969	4220	0	0	0	0	0	0	0
1	86	43	1.4	1.4	99	15	Convert TA_elm_oak_WP	0	0	0	0	4511, 4560	6080	0	0	0
1	86	44	0.5	0.5	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	86	56	24.0	24.0	82	82		1944	4193	0	0	0	0	0	0	0
1	86	62	0.4	0.4	99	0		0	0	0	0	0	6131	0	0	0
1	86	65	7.0	7.0	2	2		1961	4220	0	0	0	0	0	0	0
1	86	72	11.2	11.2	2	2		1955	4220	0	0	0	0	1220	0	0
1	86	74	3.1	3.1	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	86	80	1.2	1.2	99	0		0	0	0	0	0	6131	0	0	0
1	86	81	1.3	1.3	99	0		0	0	0	0	0	6131	0	0	0
1	86	82	0.8	0.8	99	0		0	0	0	0	0	6131	0	0	0
1	86	128	1.3	1.3	99	1	Convert JP	0	0	0	0	4511, 4560	0	0	3315 - Gravel Pit Rehab	0
1	86	149	2.5	2.5	2	2		1939	4193	0	0	0	0	0	0	0
1	86	183	3.1	3.1	3	3		1940	4220	0	0	0	0	1220	0	0
1	86	185	0.6	0.6	99	15	Convert TA_elm_oak_WP	0	0	0	0	4511, 4560	6080	0	0	0
1	86	186	0.4	0.4	99	15	Convert TA_elm_oak_WP	0	0	0	0	4511, 4560	6080	0	0	0
1	86	188	0.5	0.5	99	0		0	0	0	0	0	6131	0	0	0
1	87	37	0.7	0.7	99	15	Convert TA	0	0	0	0	4511, 4560	6080	0	0	0

Dist	Alt_C Comp	Stnd	Treat Acres	Plant acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildlife	Fire	Other Project	Riparian
1	87	47	2.1	2.1	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	88	9	30.0	63.7	91	91		1958	4115	0	0	0	0	0	0	0
1	88	20	8.2	8.2	91	91		1920	4102	0	0	0	0	0	0	0
1	88	23	28.0	55.8	91	91		1940	4115	0	0	0	0	0	0	0
1	88	42	1.2	1.2	99	0		0	0	0	0	0	6131	0	0	0
1	88	43	0.9	0.9	99	0		0	0	0	0	0	6131	0	0	0
1	88	112	13.3	13.3	91	0		1973	0	0	0	0	0	0	3315 - Temp Road	0
1	88	114	3.9	3.9	91	91		1920	4102	0	0	0	0	0	0	0
1	88	115	14.0	28.4	91	91		1960	4115	0	0	0	0	0	0	0
1	89	36	1.2	1.2	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	89	38	3.6	3.6	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	100	34	4.8	4.8	2	2		1960	4220	0	0	0	0	0	0	0
1	100	36	0.3	0.3	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	101	21	13.4	13.4	2	2		1967	4220	0	0	0	0	1220	0	0
1	101	26	13.3	13.3	2	2		1965	4220	0	0	0	0	1220	0	0
1	101	31	8.7	8.7	2	2		1974	4220	0	0	0	0	1220	0	0
1	101	33	2.6	2.6	2	2		1960	4220	0	0	0	0	1220	0	0
1	101	36	16.0	16.0	2	2		1960	4220	0	0	0	0	0	0	0
1	101	46	1.8	1.8	99	0		0	0	0	0	0	6131	0	0	0
1	101	47	1.9	1.9	99	0		0	0	0	0	0	6131	0	0	0
1	101	48	3.8	3.8	99	1	Convert JP	0	0	0	0	4511, 4560	6080	0	0	0
1	101	49	4.1	4.1	99	0		0	0	0	0	0	6131	0	0	0
1	101	50	5.7	5.7	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	101	51	1.6	1.6	99	0		0	0	0	0	0	6131	0	0	0
1	101	88	0.6	0.6	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	101	89	1.1	1.1	99	0		0	0	0	0	0	6131	0	0	0
1	101	90	0.7	0.7	99	0		0	0	0	0	0	6131	0	0	0
1	101	91	0.5	0.5	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	101	92	0.1	0.1	99	0		0	0	0	0	0	6131	0	0	0
1	101	93	0.6	0.6	99	0		0	0	0	0	0	6131	0	0	0
1	101	94	1.0	1.0	99	0		0	0	0	0	0	6131	0	0	0
1	101	97	1.1	1.1	99	0		0	0	0	0	0	6131	0	0	0

Dist	Alt_C Comp	Stnd	Treat Acres	Plant acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildlife	Fire	Other Project	Riparian
1	106	33	0.3	0.3	99	0		0	0	0	0	0	6131	0	0	0
1	117	50	1.8	1.8	99	3	Convert WP_RP	0	0	0	0	4511, 4560	6080	0	0	0
1	120	22	0.9	0.9	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	120	23	3.9	3.9	99	0		0	0	0	0	0	6131	0	0	0
1	120	24	3.4	3.4	99	0		0	0	0	0	0	6131	0	0	0
1	120	25	5.5	5.5	99	0		0	0	0	0	0	6131	0	0	0
1	123	1	64.7	64.7	2	2	Comp_JP_10	1939	4152	4431	4470	4511, 4560	0	1230	0	0
1	123	7	14.8	14.8	2	2		1942	4220	0	0	0	0	0	0	0
1	123	14	15.6	15.6	2	2		1978	4220	0	0	0	0	1220	0	0
1	123	16	7.8	7.8	2	2		1974	4220	0	0	0	0	1220	0	0
1	123	35	0.4	0.4	99	0		0	0	0	0	0	6131	0	0	0
1	123	43	5.7	5.7	2	2		1982	4220	0	0	0	0	1220	0	0
1	123	44	2.9	2.9	2	2		1982	4220	0	0	0	0	1220	0	0
1	124	3	23.5	23.5	2	2		1969	4220	0	0	0	0	1220	0	0
1	124	4	0.9	0.9	98	3	Convert WP	0	0	0	0	4511, 4560	6080	0	0	0
1	125	1	0.6	0.6	91	91		1961	4102	0	0	0	0	0	0	0
1	125	5	40.9	40.9	91	89	Convert NH	1933	4193	0	0	0	0	0	0	0
1	125	8	26.4	26.4	92	89	Convert NH	1923	4193	0	0	0	0	0	0	0
1	125	10	7.4	7.4	2	2		1968	4220	0	0	0	0	0	0	0
1	125	11	15.9	15.9	91	89	Convert NH	1959	4193	0	0	0	0	0	0	0
1	125	21	11.5	11.5	91	91		1845	4102	0	0	0	0	0	0	0
1	125	23	9.8	9.8	91	91		1959	4102	0	0	0	0	0	0	0
1	125	35	0.8	0.8	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	125	40	0.3	0.3	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	126	14	0.6	1.0	95	95	Comp WP_1	1989	0	0	4470	4511, 4560	0	0	0	5510
1	126	15	0.9	1.0	99	3	Convert WP_1	0	0	0	4470	4511, 4560	0	0	0	5510
1	126	17	2.7	2.0	82	82	Comp_WP_2	1895	0	0	4470	4511, 4560	0	0	0	5510
1	127	41	2.3	2.3	99	0		0	0	0	0	0	6131	0	0	0
1	127	42	1.5	1.5	99	0		0	0	0	0	0	6131	0	0	0
1	127	43	6.3	6.3	95	95		1950	4102	0	0	0	0	0	0	0

Dist	Alt_C Comp	Stnd	Treat Acres	Plant acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildlife	Fire	Other Project	Riparian
1	127	55	0.7	0.7	99	0		0	0	0	0	0	6131	0	0	0
1	128	14	13.8	13.8	92	89	Convert NH Comp WP_3	1884	4193	4431	0	4511, 4560	0	0	0	0
1	128	18	22.2	22.2	2	2		1961	4220	0	0	0	0	1220	0	0
1	128	25	0.7	1.0	99	3	Convert WP_1	0	0	0	0	4511, 4560	6080	0	0	0
1	128	26	6.0	6.0	99	0		0	0	0	0	0	6131	0	0	0
1	128	28	5.0	5.0	89	0		1915	0	0	0	0	0	0	3315 - Big Lake	0
1	128	60	1.1	1.1	89	0		1915	0	0	0	0	0	0	3315 - Big Lake	0
1	129	26	19.6	19.6	95	95		1940	4102	0	0	0	0	0	0	0
1	129	34	6.0	20.5	91	91		1968	4115	0	0	0	0	0	0	0
1	129	36	26.1	26.1	91	91		1928	4102	0	0	0	0	0	0	0
1	129	54	13.5	13.5	2	2		1905	4220	0	0	0	0	1213	0	0
1	129	58	3.6	3.6	99	0		0	0	0	0	0	6131	0	0	0
1	129	59	2.3	2.3	99	0		0	0	0	0	0	6131	0	0	0
1	129	60	2.3	2.3	99	0		0	0	0	0	0	6131	0	0	0
1	129	61	2.5	2.5	99	0		0	0	0	0	0	6131	0	0	0
1	129	62	4.1	4.1	99	0		0	0	0	0	0	6131	0	0	0
1	129	63	2.5	2.5	99	0		0	0	0	0	0	6131	0	0	0
1	129	64	2.9	2.9	99	0		0	0	0	0	0	6131	0	0	0
1	129	81	16.4	16.4	91	91		1928	4102	0	0	0	0	0	0	0
1	129	87	5.4	5.4	95	95		1940	4102	0	0	0	0	0	0	0
1	129	94	0.2	0.2	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	129	95	2.1	2.1	99	0		0	0	0	0	0	6131	0	0	0
1	129	96	1.2	1.2	99	0		0	0	0	0	0	6131	0	0	0
1	129	97	0.4	0.4	99	0		0	0	0	0	0	6131	0	0	0
1	129	98	1.1	1.1	99	0		0	0	0	0	0	6131	0	0	0
1	129	100	1.5	1.5	99	0		0	0	0	0	0	6131	0	0	0
1	129	102	13.2	13.2	2	2		1945	4220	0	0	0	0	1220	0	0
1	129	110	10.1	10.1	91	91		1928	4102	0	0	0	0	0	0	0
1	129	114	1.1	1.1	99	0		0	0	0	0	0	6131	0	0	0
1	129	137	0.4	0.4	99	1	Convert JP	0	0	0	0	0	6050	0	0	0

Dist	Alt_C Comp	Stnd	Treat Acres	Plant acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildlife	Fire	Other Project	Riparian
1	130	1	0.5	0.5	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	130	14	12.1	12.1	95	95		1948	4102	0	0	0	0	0	0	0
1	130	18	32.8	32.8	82	82		1913	4193	0	0	0	0	0	0	0
1	130	26	0.3	0.3	99	0		0	0	0	0	0	6131	0	0	0
1	130	42	1.3	1.3	99	0		0	0	0	0	0	6131	0	0	0
1	130	43	1.4	1.4	99	0		0	0	0	0	0	6131	0	0	0
1	131	1	7.4	7.4	2	2		1961	4220	0	0	0	0	0	0	0
1	131	11	1.8	1.8	99	1	Convert JP_RP	0	0	0	0	0	6080	0	0	0
1	131	13	20.4	20.4	2	2		1971	4220	0	0	0	0	0	0	0
1	131	18	3.8	3.8	98	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	131	27	1.9	1.9	99	0		0	0	0	0	0	6131	0	0	0
1	131	28	1.1	1.1	99	0		0	0	0	0	0	6131	0	0	0
1	131	29	1.3	1.3	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	131	30	2.0	2.0	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	131	31	1.9	1.9	99	0		0	0	0	0	0	6131	0	0	0
1	131	32	4.7	4.7	2	2		1962	4220	0	0	0	0	0	0	0
1	131	51	0.6	0.6	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	132	5	3.7	1.0	95	95	Comp_WP_1	1986	0	0	4470	4511, 4560	0	0	0	5510
1	132	7	32.7	8.0	82	82	Comp_WP_8	1922	0	0	4470	4511, 4560	0	0	0	5510
1	132	13	14.4	14.4	2	2		1944	4220	0	0	0	0	0	0	0
1	132	15	15.7	15.7	91	91		1929	4193	0	0	0	0	0	0	0
1	132	25	20.7	20.7	2	2		1969	4220	0	0	0	0	0	0	0
1	132	30	8.1	8.1	91	91		1965	4102	0	0	0	0	0	0	0
1	132	31	0.7	0.7	99	0		0	0	0	0	0	6131	0	0	0
1	132	32	11.9	11.9	2	2		1962	4220	0	0	0	0	0	0	0
1	132	38	1.6	1.6	99	0		0	0	0	0	0	6131	0	0	0
1	132	39	2.8	2.8	99	0		0	0	0	0	0	6131	0	0	0
1	132	40	1.0	1.0	99	0		0	0	0	0	0	6131	0	0	0
1	132	41	0.9	0.9	99	0		0	0	0	0	0	6131	0	0	0
1	132	42	0.9	0.9	99	3	Convert WP WS	0	0	0	4470	4511, 4560	0	0	0	5510
1	132	43	0.6	0.6	99	15	Convert TA_elm_oak	0	0	0	0	4511, 4560	6080	0	0	0

Dist	Alt_C Comp	Stnd	Treat Acres	Plant acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildlife	Fire	Other Project	Riparian
1	132	44	2.2	2.2	99	0		0	0	0	0	0	6131	0	0	0
1	132	46	9.6	9.6	91	91		1964	4102	0	0	0	0	0	0	0
1	132	56	0.3	0.3	99	0		0	0	0	0	0	6131	0	0	0
1	132	65	3.0	3.0	91	91		1965	4102	0	0	0	0	0	0	0
1	133	5	9.9	9.9	2	2		1944	4220	0	0	0	0	0	0	0
1	133	6	56.0	56.0	2	2		1969	4220	0	0	0	0	0	0	0
1	133	7	58.7	58.7	2	2		1944	4220	0	0	0	0	0	0	0
1	133	15	11.3	11.3	71	71		1918	4220	0	0	0	0	0	0	0
1	133	17	7.3	7.3	2	2		1961	4220	0	0	0	0	0	0	0
1	133	19	11.7	11.7	82	82		1925	4152	0	0	0	0	0	0	0
1	133	25	0.8	0.8	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	133	26	1.3	1.3	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	133	27	5.5	5.5	2	2		1961	4220	0	0	0	0	0	0	0
1	133	47	2.1	2.1	2	2		1969	4220	0	0	0	0	0	0	0
1	133	48	0.4	0.4	99	0		0	0	0	0	0	0	0	3315 - Temp Road	0
1	133	51	0.7	0.7	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	133	52	2.0	2.0	91	91		1918	4102	0	0	0	0	0	0	0
1	133	53	2.0	2.0	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	133	60	2.2	2.2	2	2		1944	4220	0	0	0	0	0	0	0
1	133	84	9.3	9.3	91	91		1974	0	0	0	0	0	0	3315 - Temp Road	0
1	135	31	4.2	4.2	2	1	Convert JP	1902	4117	4431	4470	4511, 4560	0	0	0	0
1	135	38	15.9	15.9	91	91		1937	4102	0	0	0	0	0	0	0
1	135	41	0.3	0.3	99	0		0	0	0	0	0	6131	0	0	0
1	135	42	57.9	57.9	2	2		1967	4220	0	0	0	0	0	0	0
1	135	106	3.8	3.8	2	2		1960	4220	0	0	0	0	0	0	0
1	137	2	21.8	21.8	1	1		1927	4220	0	0	0	0	1220	0	0
1	137	7	55.4	55.4	1	1		1930	4220	0	0	0	0	1220	0	0
1	137	8	32.8	32.8	1	1		1927	4220	0	0	0	0	1220	0	0
1	137	52	20.4	20.4	1	1		1927	4220	0	0	0	0	1220	0	0
1	137	57	8.4	8.4	1	1		1930	4220	0	0	0	0	1220	0	0

Dist	Alt_C Comp	Stnd	Treat Acres	Plant acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildlife	Fire	Other Project	Riparian
1	137	78	0.3	0.3	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	138	1	23.0	23.0	2	0		1906	0	0	0	0	0	1213	0	0
1	138	2	45.9	45.9	2	2		1903	4220	0	0	0	0	1213	0	0
1	138	3	0.1	0.1	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	138	4	0.1	0.1	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	138	5	6.6	6.6	2	0		1903	0	0	0	0	0	1213	0	0
1	138	7	29.0	29.0	91	91		1928	4102	0	0	0	0	0	0	0
1	138	8	10.0	10.0	2	2		1908	4117	4431	4470	4511	0	1230	0	0
1	138	16	10.3	10.3	2	2		1903	4220	0	0	0	0	1213	0	0
1	138	19	1.9	1.9	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	138	23	1.1	1.1	99	0		0	0	0	0	0	6131	0	0	0
1	139	17	1.9	1.9	99	3	Convert WP	0	0	0	0	4511, 4560	6080	0	0	0
1	140	3	26.5	26.5	92	92		1935	4232	0	0	0	0	0	0	0
1	140	11	62.4	62.4	2	2		1974	4220	0	0	0	0	0	0	0
1	140	13	23.3	4.0	92	92	Comp_WP_4	1939	4131	4431	4470	4511, 4560	0	0	0	0
2	5	50	2.3	2.3	99	0		0	0	0	0	0	6131	0	0	0
2	5	51	12.9	12.9	99	0		0	0	0	0	0	6131	0	0	0
2	5	53	2.1	2.1	99	0		0	0	0	0	0	6131	0	0	0
2	5	81	0.4	0.4	98	91	Convert A	0	0	0	0	0	6050	0	0	0
2	5	83	2.2	2.2	99	0		0	0	0	0	0	6131	0	0	0
2	7	24	11.8	11.8	2	2		1971	4220	0	0	0	0	1220	0	0
2	7	116	6.9	6.9	2	2		1963	4220	0	0	0	0	1220	0	0
2	9	1	22.3	22.3	11	95	Convert 95	1930	4102	0	0	0	0	0	0	0
2	9	112	1.3	1.3	11	95	Convert 95	1919	4102	0	0	0	0	0	0	0
2	11	7	20.3	20.3	2	2		1886	4220	0	0	0	0	0	0	0
2	11	10	66.1	66.1	91	89	Convert NH	1949	4151	0	0	0	0	0	0	0
2	11	22	28.9	28.9	2	2		1902	4220	0	0	0	0	1213	0	0
2	11	160	27.2	27.2	2	2		1884	4220	0	0	0	0	1213	0	0
2	12	7	53.8	8.0	89	89	Comp_WP_8	1956	4152	0	0	4511, 4560	0	0	0	5510
2	12	12	66.9	9.0	89	89	Comp_WP_9	1910	4152	0	0	4511, 4560	0	0	0	5510
2	12	17	28.1	28.1	95	0		1985	0	0	0	0	0	0	3315 -	0

Dist	Alt_C Comp	Stnd	Treat Acres	Plant acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildlife	Fire	Other Project	Riparian
															Temp Road	
2	12	19	49.4	10.0	91	89	Convert NH Comp_WP_10	1912	4152	4431	0	4511, 4560	0	0	0	0
2	12	24	1.7	1.0	99	3	Convert WP_fruiting_shrub_2	0	0	0	0	4511, 4560	6080	0	0	0
2	12	65	8.6	2.0	91	89	Convert NH Comp WP_2	1933	4152	0	0	4511, 4560	0	0	0	5510
2	13	6	12.3	12.3	82	82		1933	4193	0	0	0	0	0	0	0
2	13	18	37.0	5.0	92	89	Convert NH Comp WP_5	1912	4152	0	4470	4511, 4560	0	0	0	5510
2	13	25	35.6	3.0	91	89	Convert NH Comp WP_3	1915	4152	0	4470	4511, 4560	0	0	0	5510
2	13	27	19.8	4.0	92	89	Convert NH Comp WP_4	1915	4152	0	4470	4511, 4560	0	0	0	5510
2	14	1	7.7	7.7	91	54	Convert oak	1923	4193	0	0	0	0	0	0	0
2	14	7	13.2	13.2	2	2		1930	4220	0	0	0	0	1213	0	0
2	14	8	33.7	33.7	2	2		1958	4220	0	0	0	0	1220	0	0
2	14	10	25.6	5.0	91	54	Convert oak Comp RP JP_5	1928	4152	0	4470	4511, 4560	0	0	0	5510
2	14	12	49.8	49.8	2	0		1897	0	0	0	0	0	1113	0	0
2	14	17	17.0	17.0	91	3	Convert WP RP	1950	4117	4431	4470	4511, 4560	0	0	0	0
2	14	26	3.1	3.1	91	2	Convert RP WP	1936	4117	4431	4470	4511, 4560	0	0	0	0
2	14	31	23.1	23.1	2	0		1900	0	0	0	0	0	1113	0	0
2	14	33	27.4	27.4	91	54	Convert oak	1916	4193	0	0	0	0	0	0	0
2	14	34	20.5	20.5	91	89	Convert NH	1916	4193	0	0	0	0	0	0	0
2	14	39	29.9	29.9	3	0		1900	0	0	0	0	0	1113	0	0
2	14	40	6.4	3.0	91	91	Comp_WP_3	1928	4193	4431	0	4511, 4560	0	0	0	0
2	14	41	8.5	8.5	2	0		1900	0	0	0	0	0	1113	0	0
2	14	43	9.8	9.8	91	89	Convert NH	1916	4193	0	0	0	0	0	0	0
2	14	55	23.0	23.0	89	89		1950	4151	0	0	0	0	0	0	0
2	15	10	3.2	3.2	99	0		0	0	0	0	0	0	1113	0	0

Dist	Alt_C Comp	Stnd	Treat Acres	Plant acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildl ife	Fire	Other Project	Riapri an
2	15	11	43.2	43.2	91	89	Convert NH	1946	4220	0	0	0	0	0	0	0
2	15	14	23.5	23.5	2	0		1907	0	0	0	0	0	1113	0	0
2	15	17	19.4	19.4	2	0		1910	0	0	0	0	0	1113	0	0
2	15	21	28.9	28.9	2	0		1907	0	0	0	0	0	1113	0	0
2	15	29	7.8	7.8	92	89	Convert NH	1949	4220	0	0	0	0	0	0	0
2	15	31	88.6	88.6	2	0		1896	0	0	0	0	0	1113	0	0
2	15	32	28.5	28.5	2	0		1900	0	0	0	0	0	0	3315 - Winnie Parking	0
2	15	36	3.4	3.4	97	0		0	0	0	0	0	0	1113	0	0
2	15	64	4.8	4.8	95	89	Convert NH	1946	4220	0	0	0	0	0	0	0
2	20	12	2.5	2.5	99	0		0	0	0	0	0	6131	0	0	0
2	20	19	10.6	10.6	95	16	Convert WS	1929	4117	4431	4470	4511	0	0	0	0
2	20	29	1.3	1.3	99	0		0	0	0	0	0	6131	0	0	0
2	20	31	0.7	0.7	99	0		0	0	0	0	0	6131	0	0	0
2	20	86	0.9	0.9	99	2	Convert RP	0	0	0	0	4511	6080	0	0	0
2	21	29	2.0	2.0	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
2	22	43	0.6	0.6	99	0		0	0	0	0	0	6131	0	0	0
2	24	6	2.8	2.8	99	0		0	0	0	0	0	6131	0	0	0
2	24	29	1.8	1.8	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
2	24	63	1.3	1.3	99	0		0	0	0	0	0	6131	0	0	0
2	24	64	1.9	1.9	99	0		0	0	0	0	0	6131	0	0	0
2	24	65	1.9	1.9	99	0		0	0	0	0	0	6131	0	0	0
2	24	66	1.3	1.3	99	0		0	0	0	0	0	6131	0	0	0
2	24	89	0.5	0.5	99	91	Convert A	0	0	0	0	0	6050	0	0	0
2	24	102	0.8	0.8	99	0		0	0	0	0	0	6131	0	0	0
2	24	106	0.2	0.2	98	89	Convert NH	0	0	0	0	0	6050	0	0	0
2	24	111	0.2	0.2	98	91	Convert A	0	0	0	0	0	6050	0	0	0
2	24	112	2.7	2.7	98	71	Convert Ash	0	0	0	0	0	6050	0	0	0
2	25	32	2.8	2.8	99	0		0	0	0	0	0	6131	0	0	0
2	25	33	2.0	2.0	99	0		0	0	0	0	0	6131	0	0	0
2	25	45	2.4	2.4	99	0		0	0	0	0	0	6131	0	0	0
2	25	135	0.5	0.5	99	91	Convert A	0	0	0	0	0	6050	0	0	0
2	26	6	3.6	3.6	2	2		1962	4220	0	0	0	0	1220	0	0
2	26	29	10.1	10.1	2	2		1964	4220	0	0	0	0	0	0	0

Dist	Alt_C Comp	Stnd	Treat Acres	Plant acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildlife	Fire	Other Project	Riparian
2	26	32	25.0	25.0	2	2		1966	4220	0	0	0	0	0	0	0
2	26	42	32.2	32.2	89	89		1953	4193	0	0	0	0	0	0	0
2	26	46	6.0	6.0	92	2	Convert RP	1937	4220	0	0	0	0	0	0	0
2	26	64	33.3	33.3	91	91		1946	4115	0	0	0	0	0	0	0
2	26	66	28.9	28.9	91	91		1939	4115	0	0	0	0	0	0	0
2	26	103	3.8	3.8	2	2		1964	4220	0	0	0	0	1220	0	0
2	26	105	2.7	2.7	71	91	Convert A	1937	4102	0	0	0	0	0	0	0
2	26	167	4.6	4.6	95	2	Convert RP	1991	4220	0	0	0	0	0	0	0
2	26	177	0.6	0.6	2	2		1965	4220	0	0	0	0	1220	0	0
2	26	181	18.3	18.3	2	2		1958	4220	0	0	0	0	0	0	0
2	34	11	3.6	3.6	99	16	Convert WS_TA	0	0	0	0	4511	6080	0	0	0
2	34	22	1.2	1.2	99	15	Convert TA_elm_oak_fruiting shrubs	0	0	0	0	4511	6080	0	0	0
2	34	29	26.2	26.2	91	89	Convert NH	1924	4193	0	0	0	0	0	0	0
2	36	4	4.8	1.0	91	91	comp_WP_1	1909	4102	4431	0	4511, 4560	0	0	0	0
2	36	5	5.9	5.9	95	0		1990	0	0	0	0	0	0	3315 - Andrusia Parking	0
2	36	8	23.3	23.3	2	2		1920	4220	0	0	0	0	0	0	0
2	36	9	8.3	8.3	2	2		1920	4220	0	0	0	0	1230	0	0
2	37	37	0.4	0.4	99	91	Convert A	0	0	0	0	0	6050	0	0	0
2	38	14	0.4	0.4	98	2	Convert RP	0	0	0	0	4511	6080	0	0	0
2	38	41	1.3	1.3	99	1	Convert JP	0	0	0	0	4511, 4560	6080	0	0	0
2	39	10	1.7	1.7	99	98	Convert fruiting shrubs	0	0	0	0	4511	6080	0	0	0
2	39	27	8.2	8.2	92	1	Convert JP RP	1933	4117	4431	4470	4511, 4560	0	0	0	0
2	39	55	16.1	16.1	91	1	Convert JP	1940	4117	4431	4470	4511, 4560	0	0	0	0
2	39	74	0.3	0.3	99	91	Convert A	0	0	0	0	0	6050	0	0	0
2	40	3	25.2	25.2	92	92		1916	4131	0	4490	0	0	0	0	0
2	40	4	3.0	3.0	91	0		1989	0	0	0	0	0	0	3315 -	0

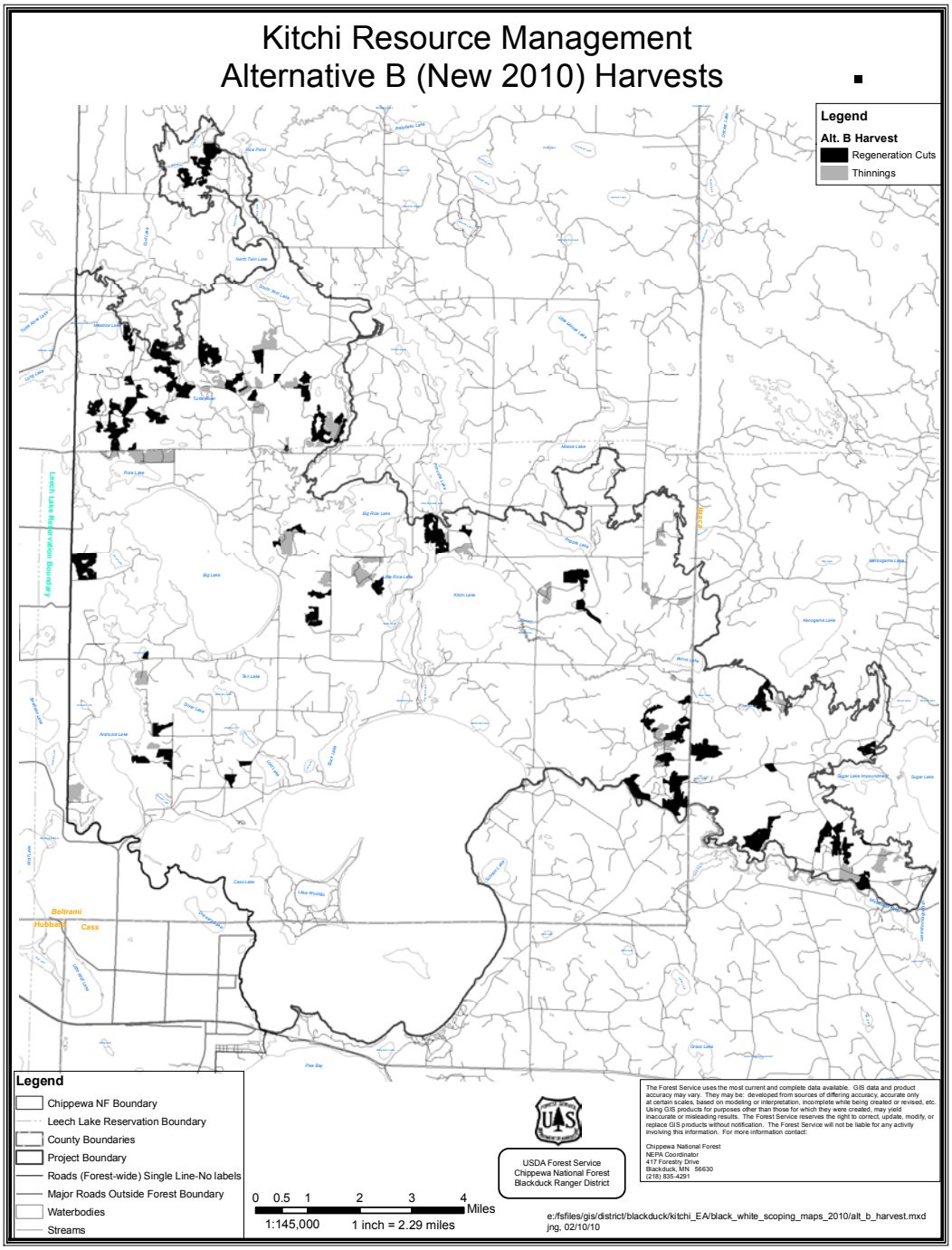
Dist	Alt_C Comp	Stnd	Treat Acres	Plant acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildl ife	Fire	Other Project	Riapri an
															Temp Road	
2	40	5	10.3	10.3	91	0		2004	0	0	0	0	0	0	3315 - Temp Road	0
2	40	7	10.3	10.3	2	2		1980	4220	0	0	0	0	0	0	0
2	40	8	0.6	0.6	99	0		0	0	0	0	0	6131	0	0	0
2	40	9	4.5	4.5	99	2	Convert RPJPWS	0	0	0	4470	4511, 4560	6080	0	0	0
2	41	1	1.2	1.2	99	91	Convert A	0	0	0	0	0	6050	0	0	0
2	41	5	24.0	24.0	2	2		1977	4220	0	0	0	0	0	0	0
2	43	12	1.5	1.5	98	91	Convert A	0	0	0	0	0	6050	0	0	0
2	44	8	15.1	15.1	71	0		1915	0	0	0	0	0	0	3315 - Toilet	0

END OF ALTERNATIVE C

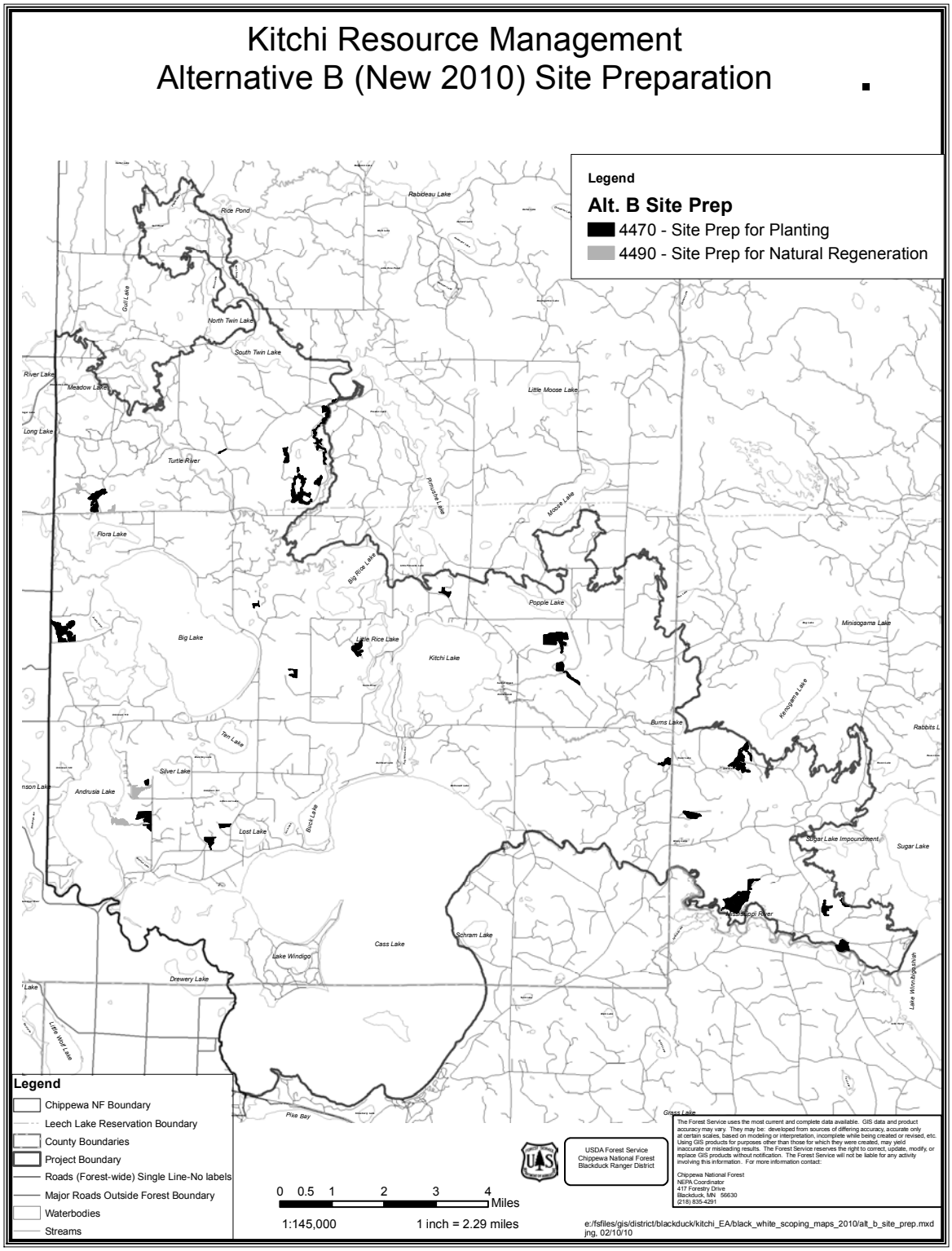
Alternative B Maps:

(Larger scale maps showing all of these stands are found in the project record. (PR# 383a01, 383a02, 383a03, 383a10, and 282a11) (The only accurate, current maps for alternatives have "(New 2010)" in their titles. If an activity map does not have this wording, then it is old and no longer accurate.)

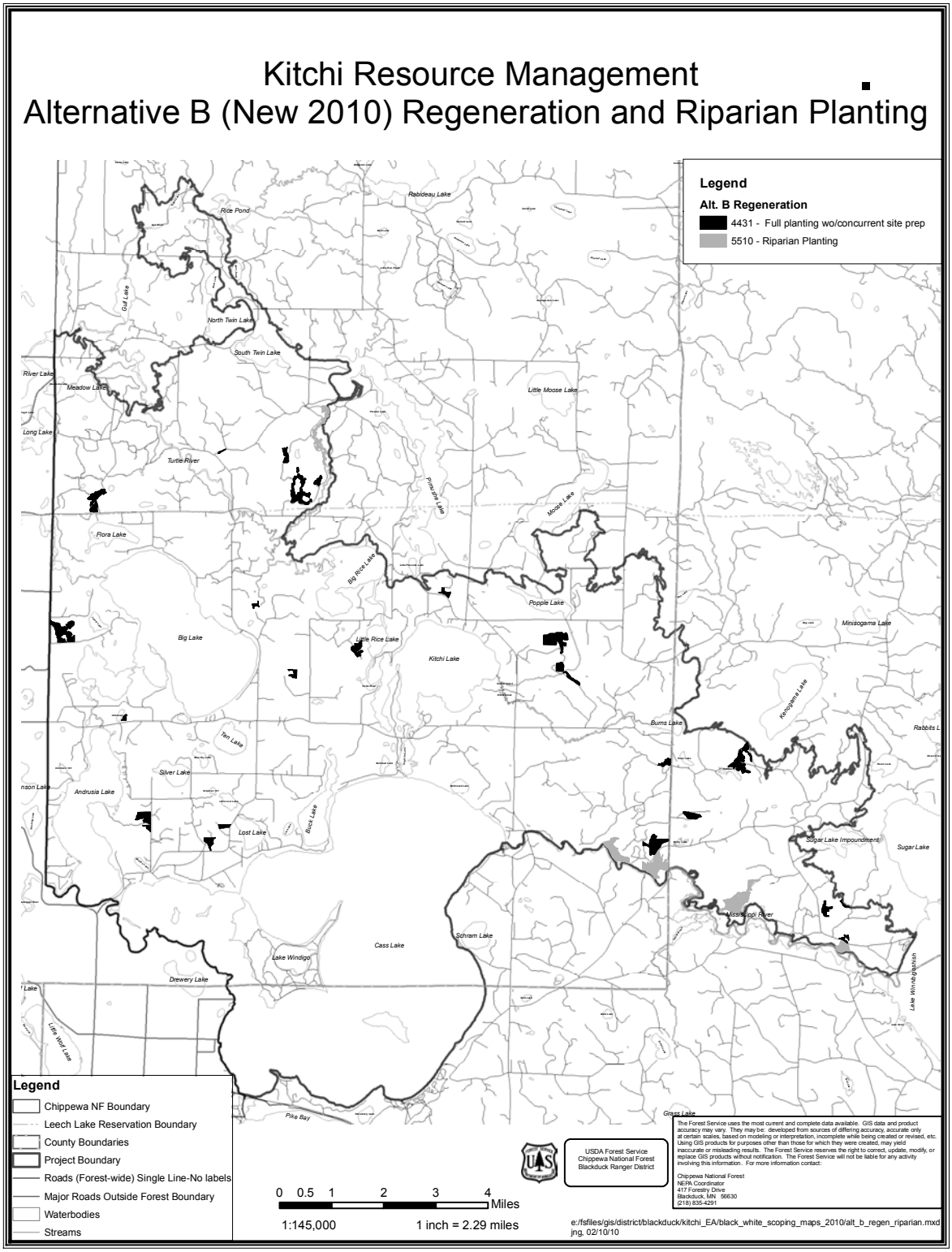
Map App. D-7 - Alternative B Harvest



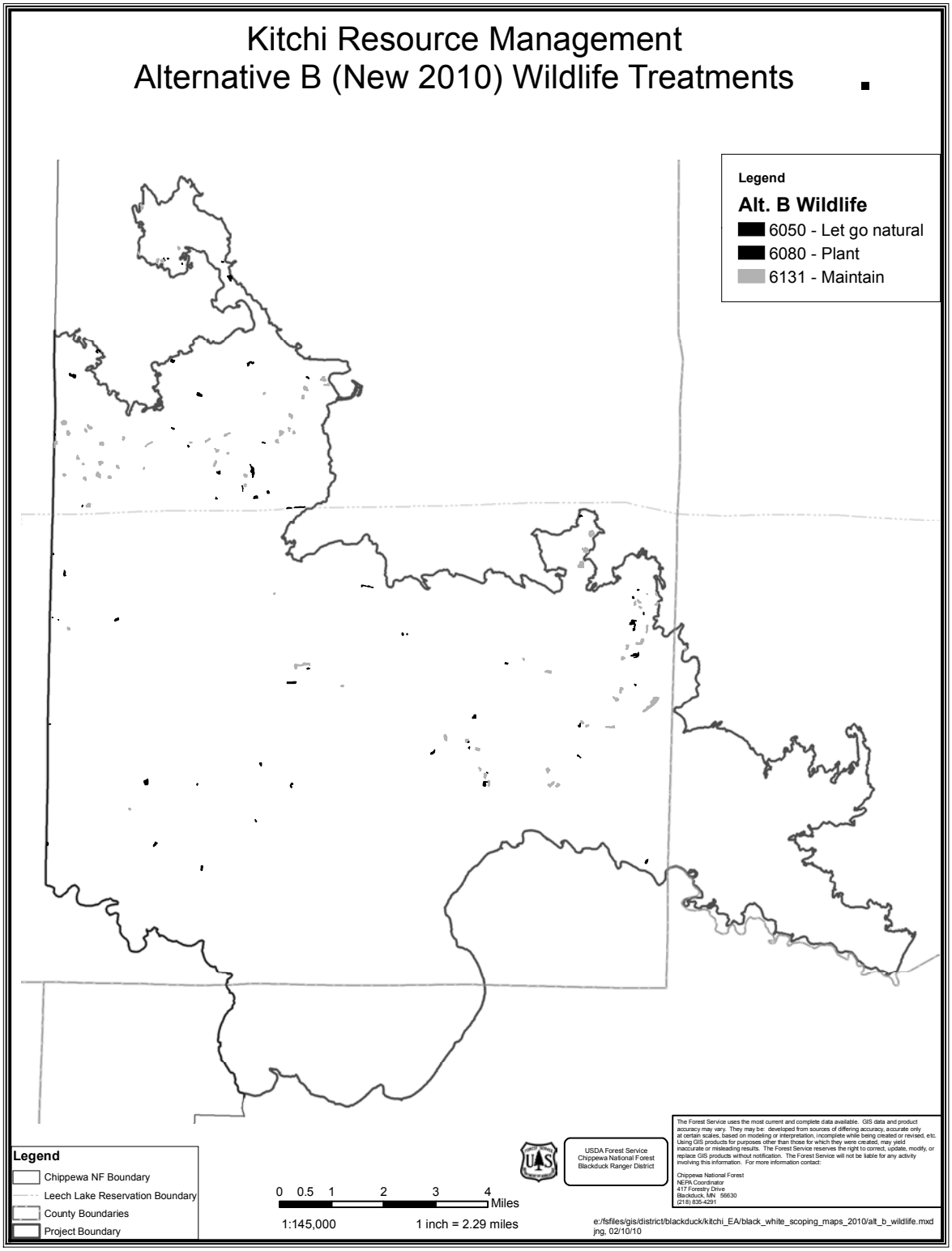
Map App. D-8 - Alternative B Site Preparation



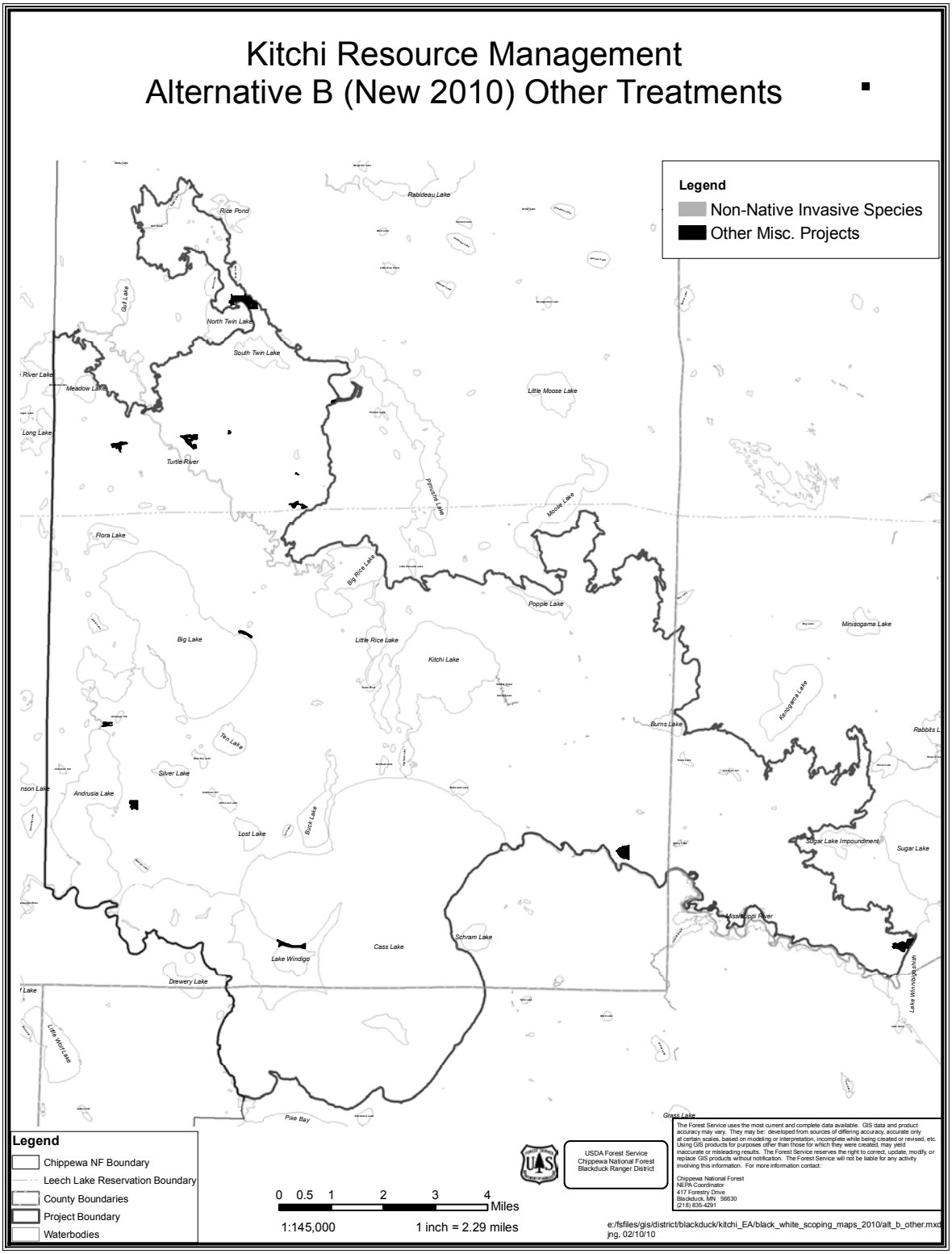
Map App. D-9 - Alternative B Regeneration/Riparian Planting



Map App. D-10 - Alternative B Wildlife



Map App. D-11 - Alternative B Other



Map App. D-12 - Alternative B Fuels/Ecosystem Burning

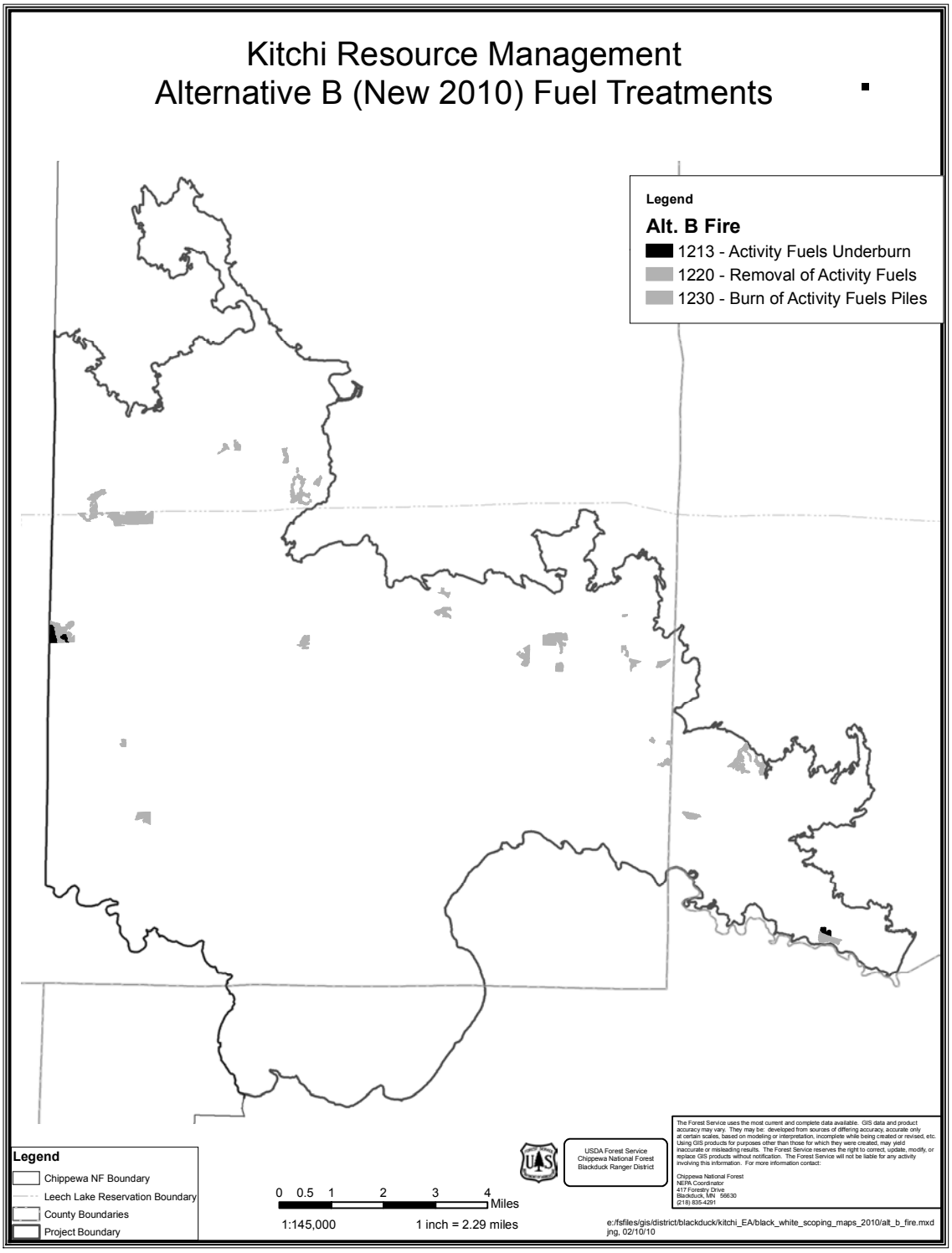


Table App. D.2 - Alternative B Prescriptions

(Larger scale maps showing all of these stands are found in the project record. (PR# 383a01, 383a02, 383a03, 383a10, and 282a11)

Dist	Alt_B Comp	Stnd	Treat Acres	Plant Acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildlife	Fire	Other Project	Riparian
1	68	4	3.1	3.1	99	0		0	0	0	0	0	6131	0	0	0
1	68	7	1.5	1.0	99	3	Convert WP_1	0	0	0	4470	4511, 4560	0	0	3315 Canoe Road	5510
1	68	14	0.9	0.9	99	0		0	0	0	0	0	6131	0	0	0
1	78	2	15.6	15.6	92	91	Convert A	1950	4102	0	0	0	0	0	0	0
1	78	3	17.5	17.5	91	91		1955	4193	0	0	0	0	0	0	0
1	78	7	27.1	27.1	91	91		1958	4102	0	0	0	0	0	0	0
1	78	15	0.1	0.1	99	0		0	0	0	0	0	6131	0	0	0
1	78	20	8.9	8.9	91	91		1955	4193	0	0	0	0	0	0	0
1	78	29	8.3	8.3	91	91		1958	4102	0	0	0	0	0	0	0
1	78	38	19.2	19.2	92	89	Convert NH	1935	4193	0	0	0	0	0	0	0
1	78	54	1.2	1.2	91	91		1958	4193	0	0	0	0	0	0	0
1	78	55	5.1	5.1	95	95		1958	4102	0	0	0	0	0	0	0
1	78	56	8.0	8.0	95	89	Convert NH	1954	4193	0	0	0	0	0	0	0
1	78	57	8.7	8.7	91	89	Convert NH	1955	4193	0	0	0	0	0	0	0
1	78	68	1.1	1.1	98	0		0	0	0	0	0	6131	0	0	0
1	78	77	2.8	2.8	91	89	Convert NH	1955	4193	0	0	0	0	0	0	0
1	79	39	0.7	0.7	99	0		0	0	0	0	0	6131	0	0	0
1	79	63	0.2	0.2	99	0		0	0	0	0	0	6131	0	0	0
1	82	67	0.4	0.4	99	15	Convert TA_elm_oak	0	0	0	0	4511	6080	0	0	0
1	82	70	1.4	1.4	99	0		0	0	0	0	0	6131	0	0	0
1	82	71	1.6	1.6	99	0		0	0	0	0	0	6131	0	0	0
1	82	77	0.3	0.3	99	15	Convert TA_elm_oak	0	0	0	0	4511	6080	0	0	0
1	82	78	0.5	0.5	99	15	Convert TA_elm_oak	0	0	0	0	4511	6080	0	0	0
1	83	9	3.6	3.6	99	15	Convert TA_elm_oak	0	0	0	0	4511, 4560	6080	0	0	0
1	83	19	44.4	44.4	82	0		1916	0	0	0	0	0	0	3315 - Bass Lake Road	0

Dist	Alt_B Comp	Stnd	Treat Acres	Plant Acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildlife	Fire	Other Project	Riparian
1	83	31	0.7	0.7	99	15	Convert TA_elm_oak	0	0	0	0	4511, 4560	6080	0	0	0
1	85	40	0.9	0.9	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	86	15	38.4	38.4	91	91		1965	4102	0	0	0	0	0	0	0
1	86	16	38.3	38.3	95	95		1965	4102	0	0	0	0	0	0	0
1	86	19	23.1	23.1	91	0		1965	0	0	0	0	0	0	3315 - Temp Road	0
1	86	21	16.9	16.9	2	2		1961	4220	0	0	0	0	0	0	0
1	86	22	16.1	16.1	95	95		1965	4102	0	0	0	0	0	0	0
1	86	27	11.8	11.8	91	91		1965	4102	0	0	0	0	0	0	0
1	86	28	3.4	3.4	3	3		1940	4220	0	0	0	0	1220	0	0
1	86	31	58.3	58.3	16	16		1969	4220	0	0	0	0	0	0	0
1	86	43	1.4	1.4	99	15	Convert TA_elm_oak_WP	0	0	0	0	4511, 4560	6080	0	0	0
1	86	44	0.5	0.5	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	86	56	24.0	24.0	82	82		1944	4193	0	0	0	0	0	0	0
1	86	62	0.4	0.4	99	0		0	0	0	0	0	6131	0	0	0
1	86	65	7.0	7.0	2	2		1961	4220	0	0	0	0	0	0	0
1	86	72	11.2	11.2	2	2		1955	4220	0	0	0	0	1220	0	0
1	86	74	3.1	3.1	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	86	80	1.2	1.2	99	0		0	0	0	0	0	6131	0	0	0
1	86	81	1.3	1.3	99	0		0	0	0	0	0	6131	0	0	0
1	86	82	0.8	0.8	99	0		0	0	0	0	0	6131	0	0	0
1	86	128	1.3	1.3	99	1	Convert JP	0	0	0	0	4511, 4560	0	0	3315 - Gravel Pit Rehab	0
1	86	149	2.5	2.5	2	2		1939	4193	0	0	0	0	0	0	0
1	86	183	3.1	3.1	3	3		1940	4220	0	0	0	0	1220	0	0
1	86	185	0.6	0.6	99	15	Convert TA_elm_oak_WP	0	0	0	0	4511, 4560	6080	0	0	0
1	86	186	0.4	0.4	99	15	Convert TA_elm_oak_WP	0	0	0	0	4511, 4560	6080	0	0	0
1	86	188	0.5	0.5	99	0		0	0	0	0	0	6131	0	0	0

Dist	Alt_B Comp	Stnd	Treat Acres	Plant Acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildlife	Fire	Other Project	Riparian
1	87	37	0.7	0.7	99	15	Convert TA	0	0	0	0	4511, 4560	6080	0	0	0
1	87	47	2.1	2.1	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	88	9	63.7	63.7	91	91		1958	4102	0	0	0	0	0	0	0
1	88	20	8.2	8.2	91	91		1920	4102	0	0	0	0	0	0	0
1	88	23	55.8	55.8	91	91		1940	4102	0	0	0	0	0	0	0
1	88	42	1.2	1.2	99	0		0	0	0	0	0	6131	0	0	0
1	88	43	0.9	0.9	99	0		0	0	0	0	0	6131	0	0	0
1	88	112	13.3	13.3	91	0		1973	0	0	0	0	0	0	3315 - Temp Road	0
1	88	114	3.9	3.9	91	91		1920	4102	0	0	0	0	0	0	0
1	88	115	28.4	28.4	91	91		1960	4102	0	0	0	0	0	0	0
1	89	36	1.2	1.2	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	89	38	3.6	3.6	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	100	34	4.8	4.8	2	2		1960	4220	0	0	0	0	0	0	0
1	100	36	0.3	0.3	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	101	21	13.4	13.4	2	2		1967	4220	0	0	0	0	1220	0	0
1	101	26	13.3	13.3	2	2		1965	4220	0	0	0	0	1220	0	0
1	101	31	8.7	8.7	2	2		1974	4220	0	0	0	0	1220	0	0
1	101	33	2.6	2.6	2	2		1960	4220	0	0	0	0	1220	0	0
1	101	36	16.0	16.0	2	2		1960	4220	0	0	0	0	0	0	0
1	101	46	1.8	1.8	99	0		0	0	0	0	0	6131	0	0	0
1	101	47	1.9	1.9	99	0		0	0	0	0	0	6131	0	0	0
1	101	48	3.8	3.8	99	1	Convert JP	0	0	0	0	4511, 4560	6080	0	0	0
1	101	49	4.1	4.1	99	0		0	0	0	0	0	6131	0	0	0
1	101	50	5.7	5.7	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	101	51	1.6	1.6	99	0		0	0	0	0	0	6131	0	0	0
1	101	88	0.6	0.6	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	101	89	1.1	1.1	99	0		0	0	0	0	0	6131	0	0	0
1	101	90	0.7	0.7	99	0		0	0	0	0	0	6131	0	0	0
1	101	91	0.5	0.5	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	101	92	0.1	0.1	99	0		0	0	0	0	0	6131	0	0	0
1	101	93	0.6	0.6	99	0		0	0	0	0	0	6131	0	0	0

Dist	Alt_B Comp	Stnd	Treat Acres	Plant Acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildlife	Fire	Other Project	Riparian
1	101	94	1.0	1.0	99	0		0	0	0	0	0	6131	0	0	0
1	101	97	1.1	1.1	99	0		0	0	0	0	0	6131	0	0	0
1	106	33	0.3	0.3	99	0		0	0	0	0	0	6131	0	0	0
1	117	50	1.8	1.8	99	3	Convert WP_RP	0	0	0	0	4511, 4560	6080	0	0	0
1	118	3	9.8	9.8	1	1		1929	4117	4431	4470	4511, 4560	0	1220	0	0
1	120	22	0.9	0.9	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	120	23	3.9	3.9	99	0		0	0	0	0	0	6131	0	0	0
1	120	24	3.4	3.4	99	0		0	0	0	0	0	6131	0	0	0
1	120	25	5.5	5.5	99	0		0	0	0	0	0	6131	0	0	0
1	123	1	64.7	64.7	2	1	Convert JP	1939	4117	4431	4470	4511, 4560	0	1230	0	0
1	123	7	14.8	14.8	2	2		1942	4117	4431	4470	4511, 4560	0	1220	0	0
1	123	14	15.6	15.6	2	2		1978	4220	0	0	0	0	1220	0	0
1	123	16	7.8	7.8	2	2		1974	4220	0	0	0	0	1220	0	0
1	123	35	0.4	0.4	99	0		0	0	0	0	0	6131	0	0	0
1	123	43	5.7	5.7	2	2		1982	4220	0	0	0	0	1220	0	0
1	123	44	2.9	2.9	2	2		1982	4220	0	0	0	0	1220	0	0
1	124	3	23.5	23.5	2	2		1969	4220	0	0	0	0	1220	0	0
1	124	4	0.9	0.9	98	3	Convert WP	0	0	0	0	4511, 4560	6080	0	0	0
1	125	1	0.6	0.6	91	91		1961	4102	0	0	0	0	0	0	0
1	125	5	40.9	40.9	91	91		1933	4102	0	0	0	0	0	0	0
1	125	8	26.4	26.4	92	89	Convert NH	1923	4193	0	0	0	0	0	0	0
1	125	10	7.4	7.4	2	2		1968	4220	0	0	0	0	0	0	0
1	125	11	15.9	15.9	91	91		1959	4102	0	0	0	0	0	0	0
1	125	21	11.5	11.5	91	91		1845	4102	0	0	0	0	0	0	0
1	125	23	9.8	9.8	91	91		1959	4102	0	0	0	0	0	0	0
1	125	35	0.8	0.8	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	125	40	0.3	0.3	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	126	14	0.6	1.0	95	95	Comp WP_1	1989	0	0	4470	4511, 4560	0	0	0	5510
1	126	15	0.9	1.0	99	3	Convert WP_1	0	0	0	4470	4511,	0	0	0	5510

Dist	Alt_B Comp	Stnd	Treat Acres	Plant Acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildlife	Fire	Other Project	Riparian
												4560				
1	126	17	2.7	2.0	82	82	Comp_WP_2	1895	0	0	4470	4511, 4560	0	0	0	5510
1	127	41	2.3	2.3	99	0		0	0	0	0	0	6131	0	0	0
1	127	42	1.5	1.5	99	0		0	0	0	0	0	6131	0	0	0
1	127	43	6.3	6.3	95	95		1950	4102	0	0	0	0	0	0	0
1	127	55	0.7	0.7	99	0		0	0	0	0	0	6131	0	0	0
1	128	14	13.8	13.8	92	89	Convert NH	1884	4193	0	0	0	0	0	0	0
1	128	18	22.2	22.2	2	2		1961	4220	0	0	0	0	1220	0	0
1	128	25	0.7	1.0	99	3	Convert_WP_1	0	0	0	0	4511, 4560	6080	0	0	0
1	128	26	6.0	6.0	99	0		0	0	0	0	0	6131	0	0	0
1	128	28	5.0	5.0	89	0		1915	0	0	0	0	0	0	3315 - Big Lake	0
1	128	48	3.4	3.4	11	95	Convert 95	1910	4102	0	0	0	0	0	0	0
1	128	60	1.1	1.1	89	0		1915	0	0	0	0	0	0	3315 - Big Lake	0
1	129	8	34.6	34.6	82	82		1890	4151	0	0	0	0	0	0	0
1	129	26	19.6	19.6	95	95		1940	4102	0	0	0	0	0	0	0
1	129	31	7.7	7.7	1	1		1928	4117	0	4490	4511	0	0	0	0
1	129	34	20.5	20.5	91	91		1968	4102	0	0	0	0	0	0	0
1	129	36	26.1	26.1	91	91		1928	4102	0	0	0	0	0	0	0
1	129	44	7.6	7.6	1	1		1945	4117	4431	4470	4511, 4560	0	1230	0	0
1	129	54	13.5	13.5	2	2		1905	4117	4431	4470	4511	0	1220	0	0
1	129	58	3.6	3.6	99	0		0	0	0	0	0	6131	0	0	0
1	129	59	2.3	2.3	99	0		0	0	0	0	0	6131	0	0	0
1	129	60	2.3	2.3	99	0		0	0	0	0	0	6131	0	0	0
1	129	61	2.5	2.5	99	0		0	0	0	0	0	6131	0	0	0
1	129	62	4.1	4.1	99	0		0	0	0	0	0	6131	0	0	0
1	129	63	2.5	2.5	99	0		0	0	0	0	0	6131	0	0	0
1	129	64	2.9	2.9	99	0		0	0	0	0	0	6131	0	0	0
1	129	81	16.4	16.4	91	91		1928	4102	0	0	0	0	0	0	0

Dist	Alt_B Comp	Stnd	Treat Acres	Plant Acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildlife	Fire	Other Project	Riparian
1	129	87	5.4	5.4	95	95		1940	4102	0	0	0	0	0	0	0
1	129	94	0.2	0.2	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	129	95	2.1	2.1	99	0		0	0	0	0	0	6131	0	0	0
1	129	96	1.2	1.2	99	0		0	0	0	0	0	6131	0	0	0
1	129	97	0.4	0.4	99	0		0	0	0	0	0	6131	0	0	0
1	129	98	1.1	1.1	99	0		0	0	0	0	0	6131	0	0	0
1	129	100	1.5	1.5	99	0		0	0	0	0	0	6131	0	0	0
1	129	102	13.2	13.2	2	2		1945	4117	4431	4470	4511	0	1220	0	0
1	129	110	10.1	10.1	91	91		1928	4102	0	0	0	0	0	0	0
1	129	114	1.1	1.1	99	0		0	0	0	0	0	6131	0	0	0
1	129	137	0.4	0.4	99	1	Convert JP	0	0	0	0	0	6050	0	0	0
1	130	1	0.5	0.5	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	130	14	12.1	12.1	95	95		1948	4102	0	0	0	0	0	0	0
1	130	18	32.8	32.8	82	82		1913	4193	0	0	0	0	0	0	0
1	130	26	0.3	0.3	99	0		0	0	0	0	0	6131	0	0	0
1	130	42	1.3	1.3	99	0		0	0	0	0	0	6131	0	0	0
1	130	43	1.4	1.4	99	0		0	0	0	0	0	6131	0	0	0
1	130	44	5.2	5.2	1	1		1922	4117	0	4490	4511	0	0	0	0
1	130	61	4.2	4.2	1	1		1945	4117	4431	4470	4511	0	1230	0	0
1	131	1	7.4	7.4	2	2		1961	4220	0	0	0	0	0	0	0
1	131	11	1.8	1.8	99	1	Convert JP_RP	0	0	0	0	0	6080	0	0	0
1	131	13	20.4	20.4	2	2		1971	4220	0	0	0	0	0	0	0
1	131	18	3.8	3.8	98	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	131	27	1.9	1.9	99	0		0	0	0	0	0	6131	0	0	0
1	131	28	1.1	1.1	99	0		0	0	0	0	0	6131	0	0	0
1	131	29	1.3	1.3	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	131	30	2.0	2.0	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	131	31	1.9	1.9	99	0		0	0	0	0	0	6131	0	0	0
1	131	32	4.7	4.7	2	2		1962	4220	0	0	0	0	0	0	0
1	131	51	0.6	0.6	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	132	5	3.7	1.0	95	95	Comp_WP_1	1986	0	0	4470	4511, 4560	0	0	0	5510
1	132	7	32.7	8.0	82	82	Comp_WP_8	1922	0	0	4470	4511, 4560	0	0	0	5510
1	132	13	14.4	14.4	2	2		1944	4117	4431	4470	4511	0	1220	0	0

Dist	Alt_B Comp	Stnd	Treat Acres	Plant Acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildlife	Fire	Other Project	Riparian
1	132	15	15.7	15.7	91	91		1929	4193	0	0	0	0	0	0	0
1	132	25	20.7	20.7	2	2		1969	4220	0	0	0	0	0	0	0
1	132	30	8.1	8.1	91	91		1965	4102	0	0	0	0	0	0	0
1	132	31	0.7	0.7	99	0		0	0	0	0	0	6131	0	0	0
1	132	32	11.9	11.9	2	2		1962	4220	0	0	0	0	0	0	0
1	132	38	1.6	1.6	99	0		0	0	0	0	0	6131	0	0	0
1	132	39	2.8	2.8	99	0		0	0	0	0	0	6131	0	0	0
1	132	40	1.0	1.0	99	0		0	0	0	0	0	6131	0	0	0
1	132	41	0.9	0.9	99	0		0	0	0	0	0	6131	0	0	0
1	132	42	0.9	0.9	99	3	Convert WP WS	0	0	0	4470	4511, 4560	0	0	0	5510
1	132	43	0.6	0.6	99	15	Convert TA_elm_oak	0	0	0	0	4511, 4560	6080	0	0	0
1	132	44	2.2	2.2	99	0		0	0	0	0	0	6131	0	0	0
1	132	46	9.6	9.6	91	91		1964	4102	0	0	0	0	0	0	0
1	132	56	0.3	0.3	99	0		0	0	0	0	0	6131	0	0	0
1	132	65	3.0	3.0	91	91		1965	4102	0	0	0	0	0	0	0
1	132	70	2.0	2.0	1	1		1942	4117	4431	4470	4511, 4560	0	1220	0	0
1	133	5	9.9	9.9	2	2		1944	4117	4431	4470	4511	0	1220	0	0
1	133	6	56.0	56.0	2	2		1969	4220	0	0	0	0	0	0	0
1	133	7	58.7	58.7	2	2		1944	4117	4431	4470	4511	0	1220	0	0
1	133	15	11.3	11.3	71	71		1918	4220	0	0	0	0	0	0	0
1	133	17	7.3	7.3	2	2		1961	4220	0	0	0	0	0	0	0
1	133	19	11.7	11.7	82	82		1925	4152	0	0	0	0	0	0	0
1	133	25	0.8	0.8	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	133	26	1.3	1.3	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	133	27	5.5	5.5	2	2		1961	4220	0	0	0	0	0	0	0
1	133	47	2.1	2.1	2	2		1969	4220	0	0	0	0	0	0	0
1	133	48	0.4	0.4	99	0		0	0	0	0	0	0	0	3315 - Temp Road	0
1	133	51	0.7	0.7	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	133	52	2.0	2.0	91	91		1918	4102	0	0	0	0	0	0	0
1	133	53	2.0	2.0	99	89	Convert NH	0	0	0	0	0	6050	0	0	0

Dist	Alt_B Comp	Stnd	Treat Acres	Plant Acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildlife	Fire	Other Project	Riparian
1	133	60	2.2	2.2	2	2		1944	4117	4431	4470	4511	0	1220	0	0
1	133	84	9.3	9.3	91	91		1974	0	0	0	0	0	0	3315 - Temp Road	0
1	135	31	4.2	4.2	2	1	Convert JP	1902	4117	4431	4470	4511, 4560	0	0	0	0
1	135	38	15.9	15.9	91	91		1937	4102	0	0	0	0	0	0	0
1	135	41	0.3	0.3	99	0		0	0	0	0	0	6131	0	0	0
1	135	42	57.9	57.9	2	2		1967	4220	0	0	0	0	0	0	0
1	135	106	3.8	3.8	2	2		1960	4220	0	0	0	0	0	0	0
1	137	2	21.8	21.8	1	1		1927	4220	0	0	0	0	1220	0	0
1	137	7	55.4	55.4	1	1		1930	4220	0	0	0	0	1220	0	0
1	137	8	32.8	32.8	1	1		1927	4220	0	0	0	0	1220	0	0
1	137	52	20.4	20.4	1	1		1927	4220	0	0	0	0	1220	0	0
1	137	57	8.4	8.4	1	1		1930	4220	0	0	0	0	1220	0	0
1	137	78	0.3	0.3	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	138	1	23.0	23.0	2	0		1906	0	0	0	0	0	1213	0	0
1	138	2	45.9	45.9	2	2		1903	4117	4431	4470	4511	0	1220	0	0
1	138	3	0.1	0.1	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	138	4	0.1	0.1	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	138	5	6.6	6.6	2	0		1903	0	0	0	0	0	1213	0	0
1	138	7	29.0	29.0	91	91		1928	4102	0	0	0	0	0	0	0
1	138	8	10.0	10.0	2	2		1908	4117	4431	4470	4511	0	1230	0	0
1	138	16	10.3	10.3	2	2		1903	4117	4431	4470	4511	0	1220	0	0
1	138	19	1.9	1.9	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	138	23	1.1	1.1	99	0		0	0	0	0	0	6131	0	0	0
1	139	17	1.9	1.9	99	3	Convert WP	0	0	0	0	4511, 4560	6080	0	0	0
1	140	3	26.5	26.5	92	92		1935	4232	0	0	0	0	0	0	0
1	140	11	62.4	62.4	2	2		1974	4220	0	0	0	0	0	0	0
1	140	13	23.3	4.0	92	92	Comp_WP_4	1939	4131	4431	4470	4511, 4560	0	0	0	0
2	5	50	2.3	2.3	99	0		0	0	0	0	0	6131	0	0	0
2	5	51	12.9	12.9	99	0		0	0	0	0	0	6131	0	0	0
2	5	53	2.1	2.1	99	0		0	0	0	0	0	6131	0	0	0

Dist	Alt_B Comp	Stnd	Treat Acres	Plant Acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildlife	Fire	Other Project	Riparian
2	5	81	0.4	0.4	98	91	Convert A	0	0	0	0	0	6050	0	0	0
2	5	83	2.2	2.2	99	0		0	0	0	0	0	6131	0	0	0
2	7	24	11.8	11.8	2	2		1971	4220	0	0	0	0	1220	0	0
2	7	116	6.9	6.9	2	2		1963	4220	0	0	0	0	1220	0	0
2	9	1	22.3	22.3	11	95	Convert 95	1930	4102	0	0	0	0	0	0	0
2	9	112	1.3	1.3	11	95	Convert 95	1919	4102	0	0	0	0	0	0	0
2	11	7	20.3	20.3	2	2		1886	4117	4431	4470	4511	0	1220	0	0
2	11	10	66.1	66.1	91	89	convert NH	1949	4151	0	0	0	0	0	0	0
2	11	22	28.9	28.9	2	2		1902	4117	4431	4470	4511	0	1220	0	0
2	11	160	27.2	27.2	2	2		1884	4117	4431	4470	4511	0	1220	0	0
2	12	7	53.8	8.0	89	89	Comp_WP_8	1956	4152	0	0	4511, 4560	0	0	0	5510
2	12	12	66.9	9.0	89	89	Comp_WP_9	1910	4152	0	0	4511, 4560, 4560	0	0	0	5510
2	12	17	28.1	28.1	95	0		1985	0	0	0	0	0	0	3315 - Temp Road	0
2	12	19	49.4	10.0	91	89	Convert NH Comp_WP_10	1912	4152	4431	0	4511, 4560	0	0	0	0
2	12	24	1.7	1.0	99	3	Convert WP_fruiting_shrub_2	0	0	0	0	4511, 4560	6080	0	0	0
2	12	65	8.6	2.0	91	89	Convert NH Comp WP_2	1933	4152	0	0	4511, 4560	0	0	0	5510
2	13	6	12.3	12.3	82	82		1933	4193	0	0	0	0	0	0	0
2	13	18	37.0	5.0	92	89	Convert NH Comp WP_5	1912	4152	0	4470	4511, 4560	0	0	0	5510
2	13	25	35.6	3.0	91	89	Convert NH Comp WP_3	1915	4152	0	4470	4511, 4560	0	0	0	5510
2	13	27	19.8	4.0	92	89	Convert NH Comp WP_4	1915	4152	0	4470	4511, 4560	0	0	0	5510
2	14	1	7.7	7.7	91	54	Convert oak	1923	4193	0	0	0	0	0	0	0
2	14	7	13.2	13.2	2	2		1930	4220	0	0	0	0	1213	0	0
2	14	8	33.7	33.7	2	2		1958	4220	0	0	0	0	1220	0	0
2	14	10	25.6	5.0	91	54	Convert oak Comp	1928	4152	0	4470	4511,	0	0	0	5510

Dist	Alt_B Comp	Stnd	Treat Acres	Plant Acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildlife	Fire	Other Project	Riparian
							RP_JP_5					4560				
2	14	17	17.0	17.0	91	3	Convert WP RP	1950	4117	4431	4470	4511, 4560	0	0	0	0
2	14	26	3.1	3.1	91	2	Convert RP WP	1936	4117	4431	4470	4511, 4560	0	0	0	0
2	14	33	27.4	27.4	91	54	Convert oak	1916	4193	0	0	0	0	0	0	0
2	14	34	20.5	20.5	91	89	Convert NH	1916	4193	0	0	0	0	0	0	0
2	14	40	6.4	3.0	91	91	Comp_WP_3	1928	4193	4431	0	4511, 4560	0	0	0	0
2	14	43	9.8	9.8	91	89	Convert NH	1916	4193	0	0	0	0	0	0	0
2	14	55	23.0	23.0	89	89		1950	4151	0	0	0	0	0	0	0
2	15	11	43.2	43.2	91	89	Convert NH	1946	4220	0	0	0	0	0	0	0
2	15	29	7.8	7.8	92	89	Convert NH	1949	4220	0	0	0	0	0	0	0
2	15	32	28.5	28.5	2	0		1900	0	0	0	0	0	0	3315 - Winnie Parking	0
2	15	64	4.8	4.8	95	89	Convert NH	1946	4220	0	0	0	0	0	0	0
2	20	12	2.5	2.5	99	0		0	0	0	0	0	6131	0	0	0
2	20	19	10.6	10.6	95	16	Convert WS	1929	4117	4431	4470	4511	0	0	0	0
2	20	29	1.3	1.3	99	0		0	0	0	0	0	6131	0	0	0
2	20	31	0.7	0.7	99	0		0	0	0	0	0	6131	0	0	0
2	20	86	0.9	0.9	99	2	Convert RP	0	0	0	0	4511	6080	0	0	0
2	21	29	2.0	2.0	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
2	22	43	0.6	0.6	99	0		0	0	0	0	0	6131	0	0	0
2	24	6	2.8	2.8	99	0		0	0	0	0	0	6131	0	0	0
2	24	29	1.8	1.8	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
2	24	63	1.3	1.3	99	0		0	0	0	0	0	6131	0	0	0
2	24	64	1.9	1.9	99	0		0	0	0	0	0	6131	0	0	0
2	24	65	1.9	1.9	99	0		0	0	0	0	0	6131	0	0	0
2	24	66	1.3	1.3	99	0		0	0	0	0	0	6131	0	0	0
2	24	89	0.5	0.5	99	91	Convert A	0	0	0	0	0	6050	0	0	0
2	24	102	0.8	0.8	99	0		0	0	0	0	0	6131	0	0	0
2	24	106	0.2	0.2	98	89	Convert NH	0	0	0	0	0	6050	0	0	0
2	24	111	0.2	0.2	98	91	Convert A	0	0	0	0	0	6050	0	0	0

Dist	Alt_B Comp	Stnd	Treat Acres	Plant Acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildlife	Fire	Other Project	Riparian
2	24	112	2.7	2.7	98	71	Convert Ash	0	0	0	0	0	6050	0	0	0
2	25	32	2.8	2.8	99	0		0	0	0	0	0	6131	0	0	0
2	25	33	2.0	2.0	99	0		0	0	0	0	0	6131	0	0	0
2	25	45	2.4	2.4	99	0		0	0	0	0	0	6131	0	0	0
2	25	135	0.5	0.5	99	91	Convert A	0	0	0	0	0	6050	0	0	0
2	26	1	12.3	12.3	2	2		1896	4117	4431	4470	4511	0	1220	0	0
2	26	6	3.6	3.6	2	2		1962	4220	0	0	0	0	1220	0	0
2	26	29	10.1	10.1	2	2		1964	4220	0	0	0	0	0	0	0
2	26	32	25.0	25.0	2	2		1966	4220	0	0	0	0	0	0	0
2	26	42	32.2	32.2	89	89		1953	4193	0	0	0	0	0	0	0
2	26	46	6.0	6.0	92	2	Convert RP	1937	4220	0	0	0	0	0	0	0
2	26	64	33.3	33.3	91	91		1946	4115	0	0	0	0	0	0	0
2	26	66	28.9	28.9	91	91		1939	4115	0	0	0	0	0	0	0
2	26	103	3.8	3.8	2	2		1964	4220	0	0	0	0	1220	0	0
2	26	105	2.7	2.7	71	91	Convert A	1937	4102	0	0	0	0	0	0	0
2	26	167	4.6	4.6	95	2	Convert RP	1991	4220	0	0	0	0	0	0	0
2	26	177	0.6	0.6	2	2		1965	4220	0	0	0	0	1220	0	0
2	26	178	26.7	26.7	71	91	Convert A	1920	4102	0	0	0	0	0	0	0
2	26	181	18.3	18.3	2	2		1958	4220	0	0	0	0	0	0	0
2	34	11	3.6	3.6	99	16	Convert WS_TA	0	0	0	0	4511	6080	0	0	0
2	34	19	10.0	10.0	1	1		1936	4117	4431	4470	4511, 4560	0	0	0	0
2	34	22	1.2	1.2	99	15	Convert TA_elm_oak_fruiting shrubs	0	0	0	0	4511	6080	0	0	0
2	34	29	26.2	26.2	91	89	Convert NH	1924	4193	0	0	0	0	0	0	0
2	36	4	4.8	1.0	91	91	comp_WP_1	1909	4102	4431	0	4511, 4560	0	0	0	0
2	36	5	5.9	5.9	95	0		1990	0	0	0	0	0	0	3315 - Andrusia Parking	0
2	36	8	23.3	23.3	2	2		1920	4220	0	0	0	0	0	0	0
2	36	9	8.3	8.3	2	2		1920	4220	0	0	0	0	1230	0	0

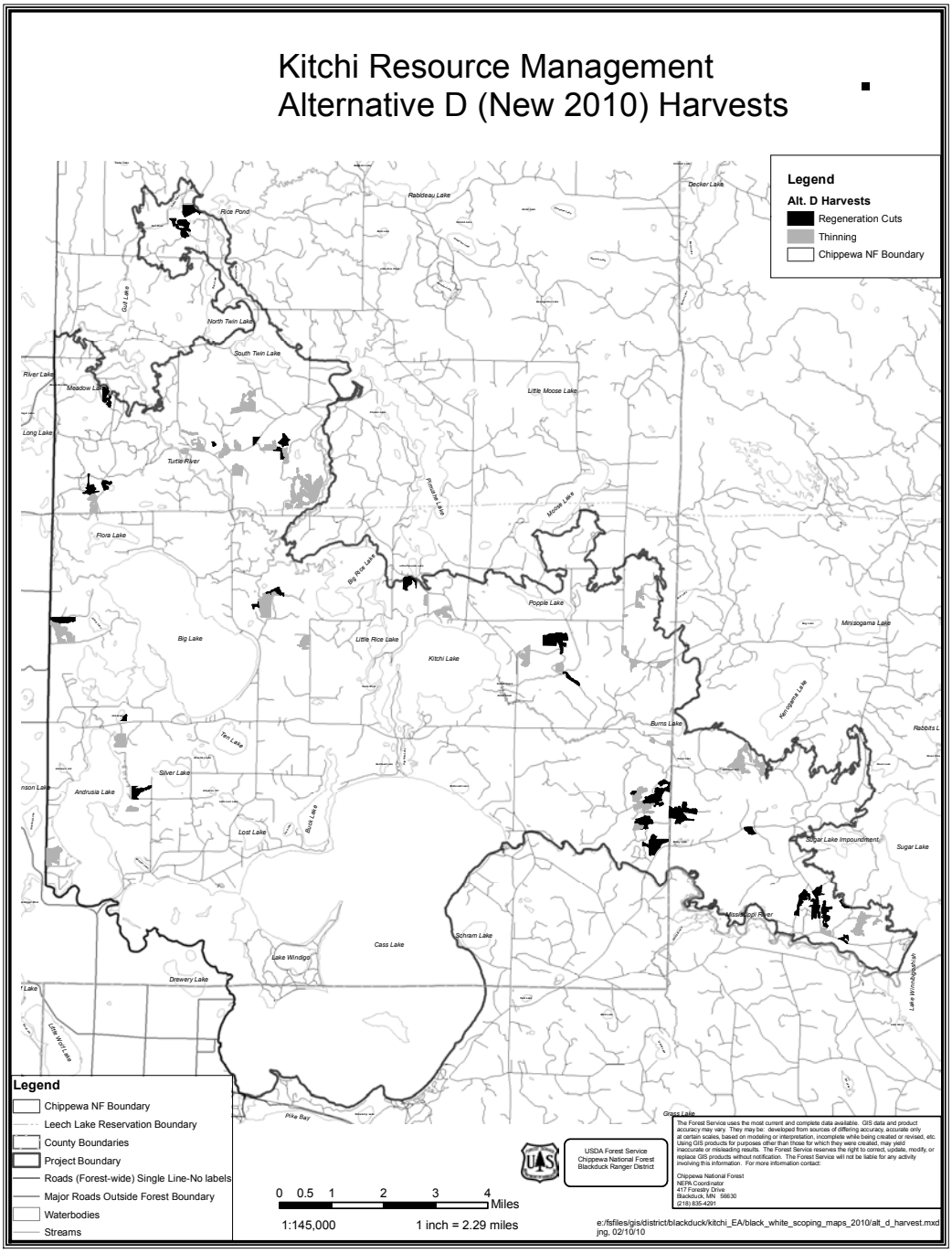
Dist	Alt_B Comp	Stnd	Treat Acres	Plant Acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildlife	Fire	Other Project	Riparian
2	37	37	0.4	0.4	99	91	Convert A	0	0	0	0	0	6050	0	0	0
2	38	14	0.4	0.4	98	2	Convert RP	0	0	0	0	4511	6080	0	0	0
2	38	41	1.3	1.3	99	1	Convert JP	0	0	0	0	4511, 4560	6080	0	0	0
2	39	10	1.7	1.7	99	98	Convert fruiting shrubs	0	0	0	0	4511	6080	0	0	0
2	39	27	8.2	8.2	92	1	Convert JP RP	1933	4117	4431	4470	4511, 4560	0	0	0	0
2	39	55	16.1	16.1	91	1	Convert JP	1940	4117	4431	4470	4511, 4560	0	0	0	0
2	39	74	0.3	0.3	99	91	Convert A	0	0	0	0	0	6050	0	0	0
2	40	3	25.2	25.2	92	92		1916	4131	0	4490	0	0	0	0	0
2	40	4	3.0	3.0	91	0		1989	0	0	0	0	0	0	3315 - Temp Road	0
2	40	5	10.3	10.3	91	0		2004	0	0	0	0	0	0	3315 - Temp Road	0
2	40	7	10.3	10.3	2	2		1980	4220	0	0	0	0	0	0	0
2	40	8	0.6	0.6	99	0		0	0	0	0	0	6131	0	0	0
2	40	9	4.5	4.5	99	2	Convert RPJPWS	0	0	0	4470	4511, 4560	6080	0	0	0
2	40	12	29.2	29.2	1	1		1935	4117	4431	4470	4511, 4560	0	1220	0	0
2	40	15	19.5	19.5	92	92		1915	4131	0	4490	0	0	0	0	0
2	41	1	1.2	1.2	99	91	Convert A	0	0	0	0	0	6050	0	0	0
2	41	5	24.0	24.0	2	2		1977	4220	0	0	0	0	0	0	0
2	42	10	5.3	5.3	1	1		1928	4117	4431	4470	4511, 4560	0	0	0	0
2	43	12	1.5	1.5	98	91	Convert A	0	0	0	0	0	6050	0	0	0
2	44	8	15.1	15.1	71	0		1915	0	0	0	0	0	0	3315 - Toilet	0

END OF ALTERNATIVE B

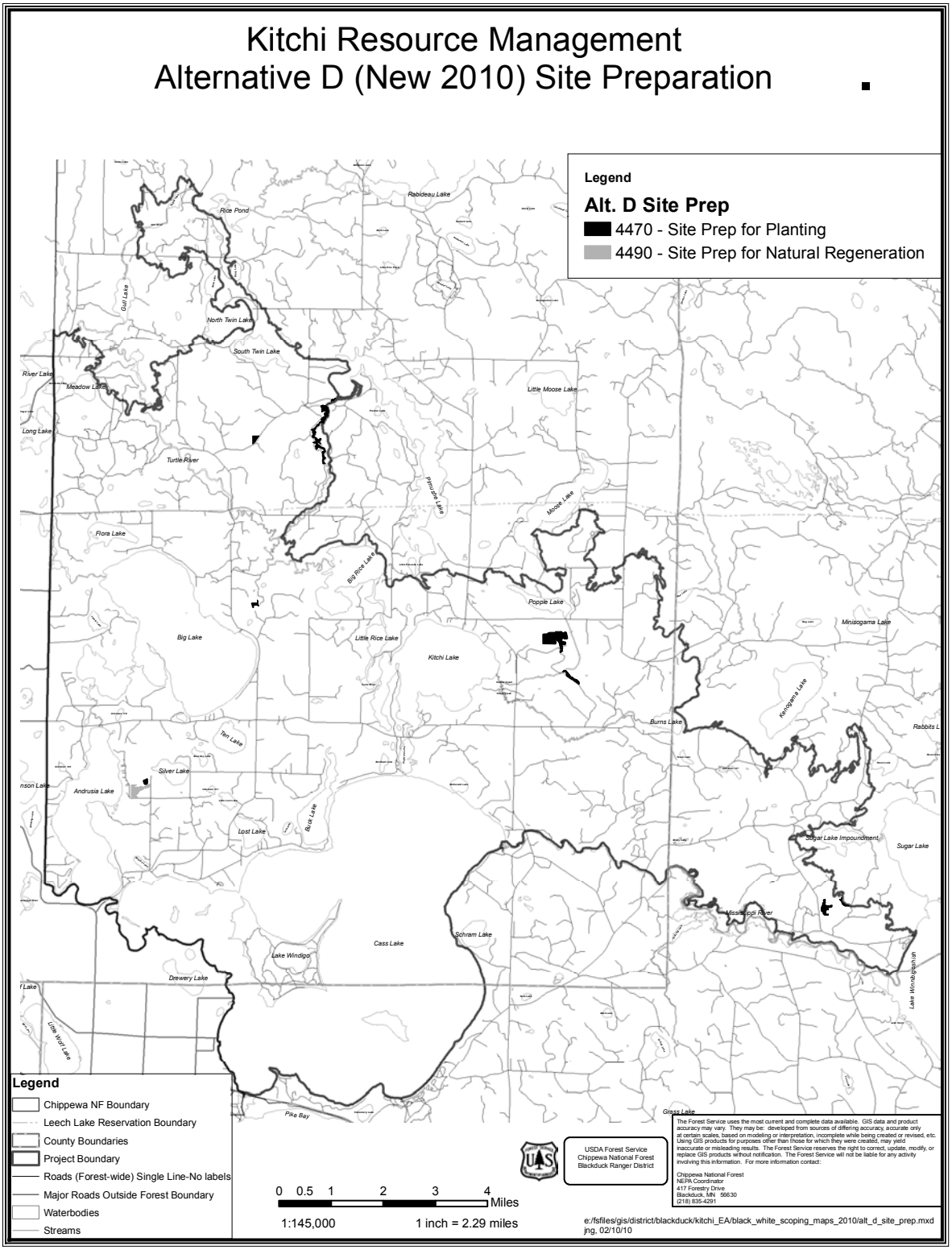
Alternative D Maps:

(Larger scale maps showing all of these stands are found in the project record. (PR# 383a07, 383a08, 383a09, 383a14, and 282a15) (The only accurate, current maps for alternatives have "(New 2010)" in their titles. If an activity map does not have this wording, then it is old and no longer accurate.)

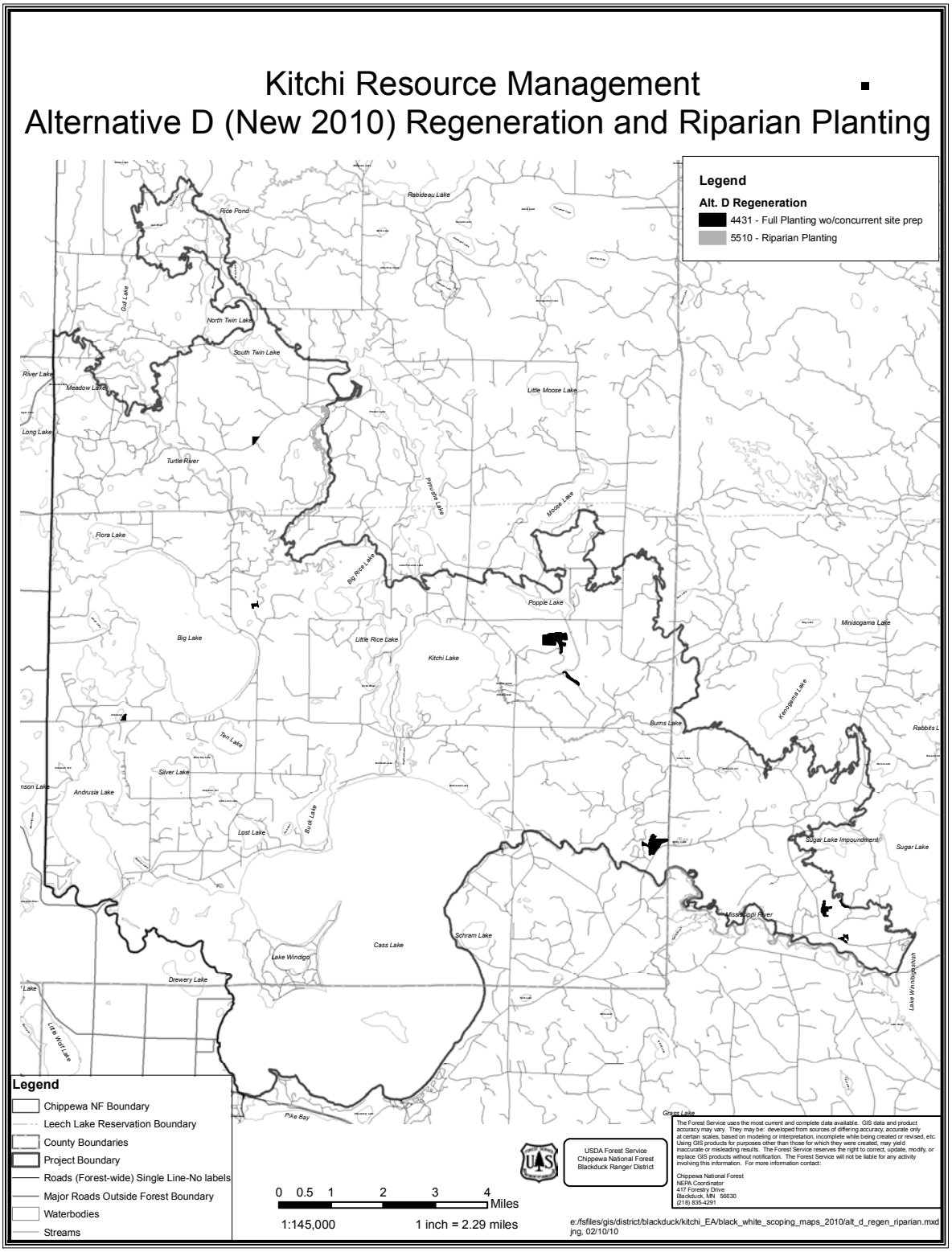
Map App. D-13 - Alternative D Harvest



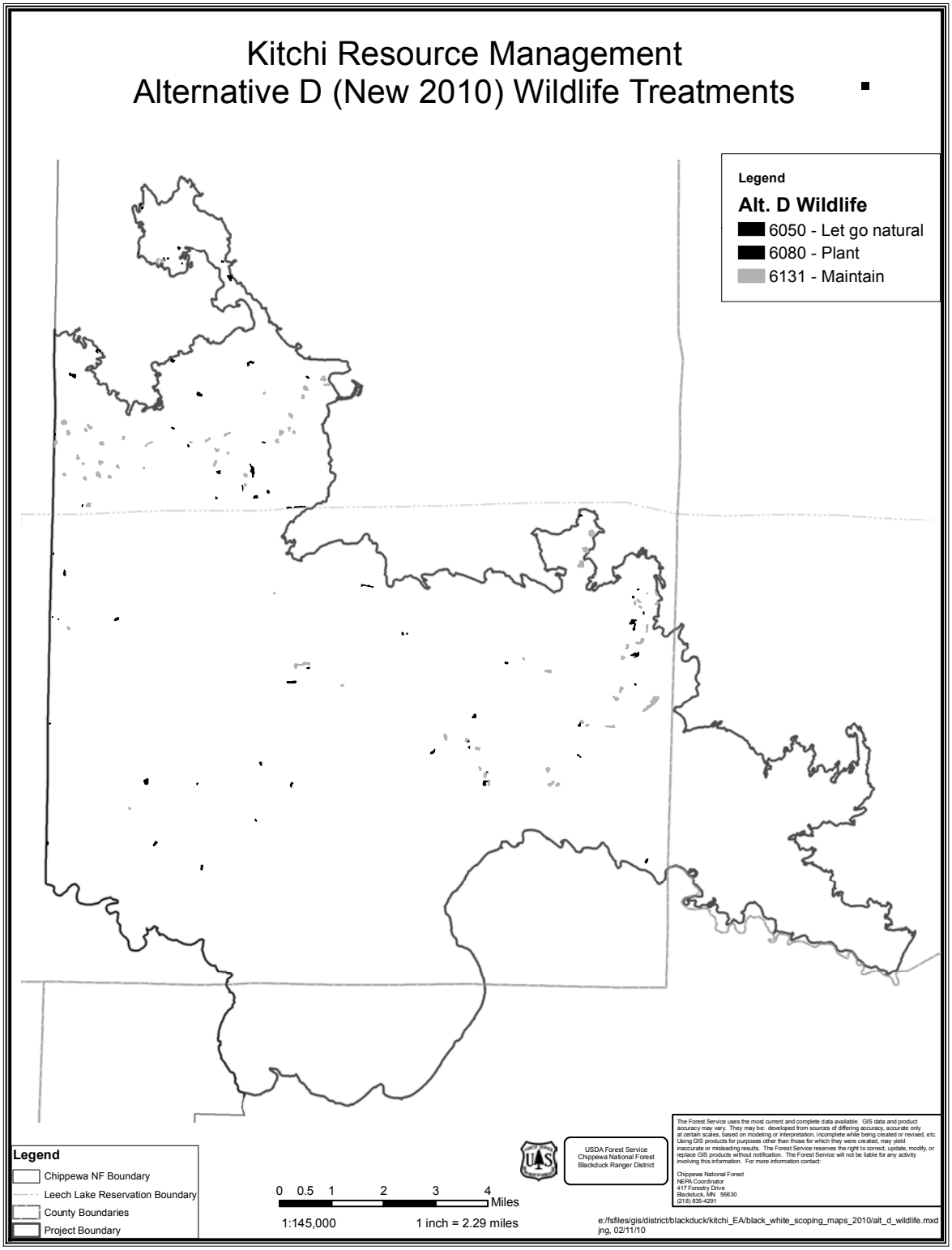
Map App. D-14 - Alternative D Site Preparation



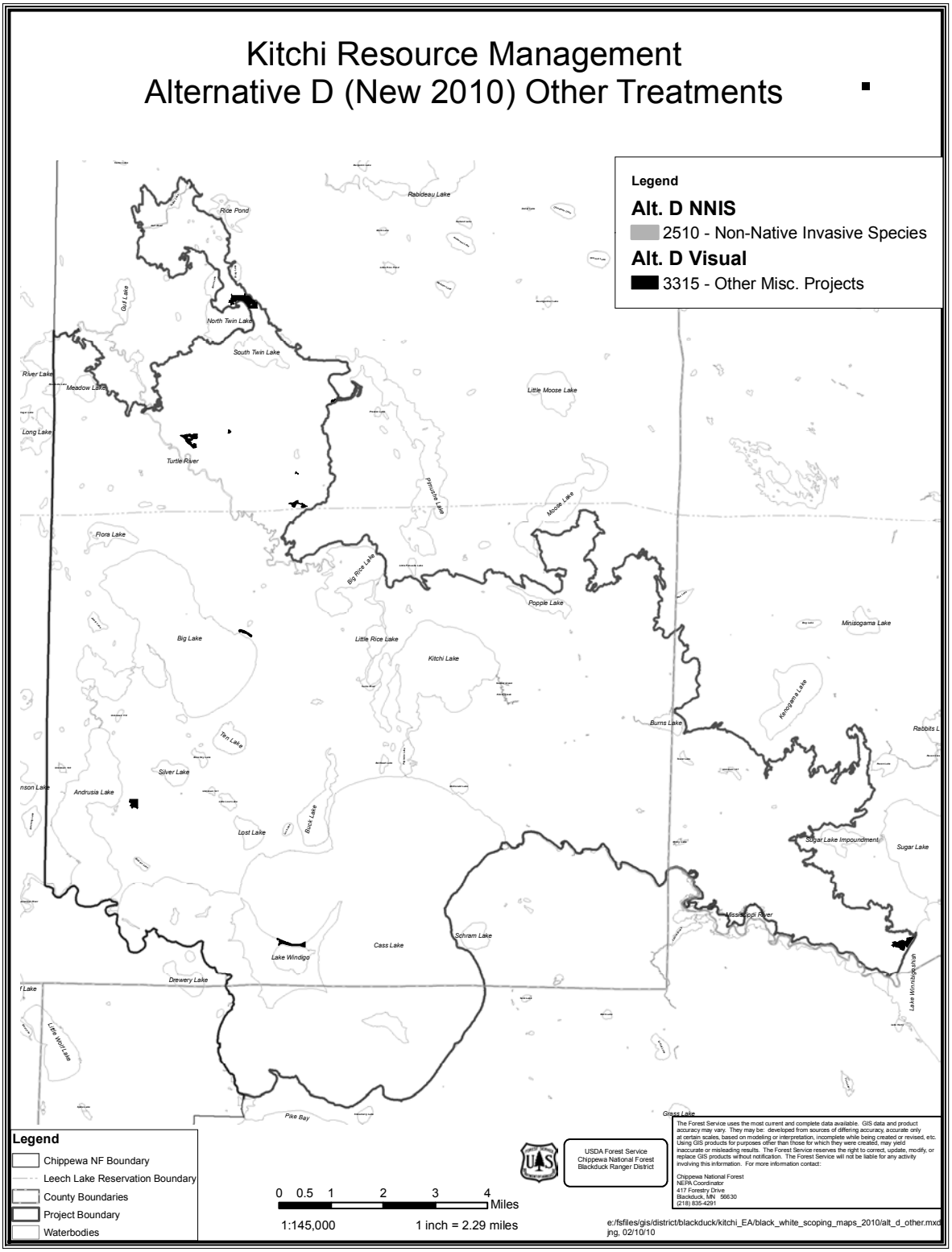
Map App. D-15 - Alternative D Regeneration/Riparian Planting



Map App. D-16 - Alternative D Wildlife



Map App. D-17 - Alternative D Other



Map App. D-18 - Alternative D Fuels/Ecosystem Burning

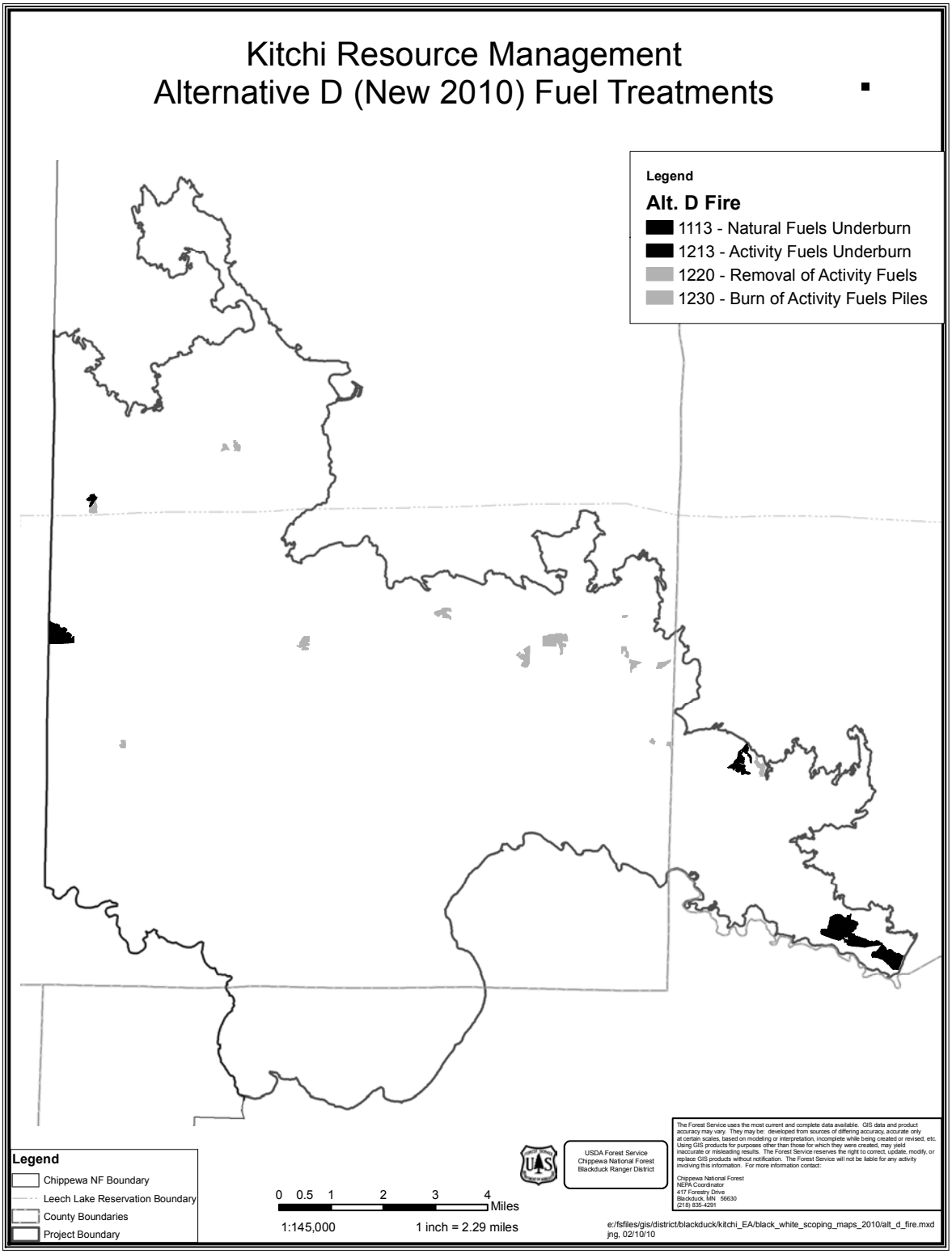


Table App. D.3 - Alternative D Prescriptions

(Larger scale maps showing all of these stands are found in the project record. (PR# 383a07, 383a08, 383a09, 383a14, and 282a15)

Dist	Alt_D Comp	Stnd	Treat Acres	Plant acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildl ife	Fire	Other Project	Riapri an
1	68	4	3.1	3.1	99	0		0	0	0	0	0	6131	0	0	0
1	68	7	1.5	1.0	99	3	Convert WP_1	0	0	0	4470	4511, 4560	0	0	3315 Canoe Road	5510
1	68	14	0.9	0.9	99	0		0	0	0	0	0	6131	0	0	0
1	78	3	17.5	17.5	91	91		1955	4193	0	0	0	0	0	0	0
1	78	15	0.1	0.1	99	16	convert WS_fruiting shrubs	0	0	0	0	4511	6080	0	0	0
1	78	20	8.9	8.9	91	91		1955	4193	0	0	0	0	0	0	0
1	78	38	19.2	19.2	92	89	Convert NH	1935	4193	0	0	0	0	0	0	0
1	78	54	1.2	1.2	91	91		1958	4193	0	0	0	0	0	0	0
1	78	56	8.0	8.0	95	89	Convert NH	1954	4193	0	0	0	0	0	0	0
1	78	57	8.7	8.7	91	89	Convert NH	1955	4193	0	0	0	0	0	0	0
1	78	68	1.1	1.1	98	16	Convert WS_fruiting shrubs	0	0	0	0	4511	6080	0	0	0
1	78	77	2.8	2.8	91	89	Convert NH	1955	4193	0	0	0	0	0	0	0
1	79	39	0.7	0.7	99	16	Convert WS_fruiting shrubs	0	0	0	0	4511	6080	0	0	0
1	79	63	0.2	0.2	99	16	Convert WS_fruiting shrubs	0	0	0	0	4511	6080	0	0	0
1	82	67	0.4	0.4	99	15	Convert TA_elm_oak	0	0	0	0	4511	6080	0	0	0
1	82	70	1.4	1.4	99	0		0	0	0	0	0	6131	0	0	0
1	82	71	1.6	1.6	99	0		0	0	0	0	0	6131	0	0	0
1	82	77	0.3	0.3	99	15	Convert TA_elm_oak	0	0	0	0	4511	6080	0	0	0
1	82	78	0.5	0.5	99	15	Convert TA_elm_oak	0	0	0	0	4511	6080	0	0	0

Dist	Alt_D Comp	Stnd	Treat Acres	Plant acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildl ife	Fire	Other Project	Riapri an
1	83	9	3.6	3.6	99	15	Convert TA_elm_oak	0	0	0	0	4511, 4560	6080	0	0	0
1	83	19	44.4	44.4	82	0		1916	0	0	0	0	0	0	3315 - Bass Lake Road	0
1	83	31	0.7	0.7	99	15	Convert TA_elm_oak	0	0	0	0	4511, 4560	6080	0	0	0
1	85	40	0.9	0.9	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	86	19	23.1	23.1	91	0		1965	0	0	0	0	0	0	3315 - Temp Road	0
1	86	21	16.9	16.9	2	2		1961	4220	0	0	0	0	0	0	0
1	86	28	3.4	3.4	3	3		1940	4220	0	0	0	0	1220	0	0
1	86	31	58.3	58.3	16	16		1969	4220	0	0	0	0	0	0	0
1	86	43	1.4	1.4	99	15	Convert TA_elm_oak_WP	0	0	0	0	4511, 4560	6080	0	0	0
1	86	44	0.5	0.5	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	86	62	0.4	0.4	99	0		0	0	0	0	0	6131	0	0	0
1	86	65	7.0	7.0	2	2		1961	4220	0	0	0	0	0	0	0
1	86	72	11.2	11.2	2	2		1955	4220	0	0	0	0	1220	0	0
1	86	74	3.1	3.1	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	86	80	1.2	1.2	99	0		0	0	0	0	0	6131	0	0	0
1	86	81	1.3	1.3	99	0		0	0	0	0	0	6131	0	0	0
1	86	82	0.8	0.8	99	0		0	0	0	0	0	6131	0	0	0
1	86	128	1.3	1.3	99	1	Convert JP	0	0	0	0	4511, 4560	0	0	3315 - Gravel Pit Rehab	0
1	86	149	2.5	2.5	2	2		1939	4193	0	0	0	0	0	0	0
1	86	183	3.1	3.1	3	3		1940	4220	0	0	0	0	1220	0	0
1	86	185	0.6	0.6	99	15	Convert TA_elm_oak_WP	0	0	0	0	4511, 4560	6080	0	0	0
1	86	186	0.4	0.4	99	15	Convert	0	0	0	0	4511,	6080	0	0	0

Dist	Alt_D Comp	Stnd	Treat Acres	Plant acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildl ife	Fire	Other Project	Riapri an
							TA_elm_oak_WP					4560				
1	86	188	0.5	0.5	99	0		0	0	0	0	0	6131	0	0	0
1	87	37	0.7	0.7	99	15	Convert TA	0	0	0	0	4511, 4560	6080	0	0	0
1	87	47	2.1	2.1	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	88	42	1.2	1.2	99	0		0	0	0	0	0	6131	0	0	0
1	88	43	0.9	0.9	99	0		0	0	0	0	0	6131	0	0	0
1	89	36	1.2	1.2	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	89	38	3.6	3.6	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	100	34	4.8	4.8	2	2		1960	4220	0	0	0	0	0	0	0
1	100	36	0.3	0.3	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	101	21	13.4	13.4	2	2		1967	4220	0	0	0	0	1220	0	0
1	101	26	13.3	13.3	2	2		1965	4220	0	0	0	0	1220	0	0
1	101	31	8.7	8.7	2	2		1974	4220	0	0	0	0	1220	0	0
1	101	33	2.6	2.6	2	2		1960	4220	0	0	0	0	1220	0	0
1	101	36	16.0	16.0	2	2		1960	4220	0	0	0	0	0	0	0
1	101	46	1.8	1.8	99	0		0	0	0	0	0	6131	0	0	0
1	101	47	1.9	1.9	99	0		0	0	0	0	0	6131	0	0	0
1	101	48	3.8	3.8	99	1	Convert JP	0	0	0	0	4511, 4560	6080	0	0	0
1	101	49	4.1	4.1	99	0		0	0	0	0	0	6131	0	0	0
1	101	50	5.7	5.7	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	101	51	1.6	1.6	99	0		0	0	0	0	0	6131	0	0	0
1	101	88	0.6	0.6	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	101	89	1.1	1.1	99	0		0	0	0	0	0	6131	0	0	0
1	101	90	0.7	0.7	99	0		0	0	0	0	0	6131	0	0	0
1	101	91	0.5	0.5	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	101	92	0.1	0.1	99	0		0	0	0	0	0	6131	0	0	0
1	101	93	0.6	0.6	99	0		0	0	0	0	0	6131	0	0	0
1	101	94	1.0	1.0	99	0		0	0	0	0	0	6131	0	0	0
1	101	97	1.1	1.1	99	0		0	0	0	0	0	6131	0	0	0
1	106	33	0.3	0.3	99	0		0	0	0	0	0	6131	0	0	0
1	117	50	1.8	1.8	99	3	Convert WP_RP	0	0	0	0	4511, 4560	6080	0	0	0

Dist	Alt_D Comp	Stnd	Treat Acres	Plant acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildl ife	Fire	Other Project	Riapri an
1	120	22	0.9	0.9	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	120	23	3.9	3.9	99	0		0	0	0	0	0	6131	0	0	0
1	120	24	3.4	3.4	99	0		0	0	0	0	0	6131	0	0	0
1	120	25	5.5	5.5	99	0		0	0	0	0	0	6131	0	0	0
1	123	1	64.7	64.7	2	2	Comp_JP_10	1939	4152	4431	4470	4511, 4560	0	1230	0	0
1	123	7	14.8	14.8	2	2		1942	4220	0	0	0	0	0	0	0
1	123	14	15.6	15.6	2	2		1978	4220	0	0	0	0	1220	0	0
1	123	16	7.8	7.8	2	2		1974	4220	0	0	0	0	1220	0	0
1	123	35	0.4	0.4	99	0		0	0	0	0	0	6131	0	0	0
1	123	43	5.7	5.7	2	2		1982	4220	0	0	0	0	1220	0	0
1	123	44	2.9	2.9	2	2		1982	4220	0	0	0	0	1220	0	0
1	124	3	23.5	23.5	2	2		1969	4220	0	0	0	0	1220	0	0
1	124	4	0.9	0.9	98	3	Convert WP	0	0	0	0	4511, 4560	6080	0	0	0
1	125	1	0.6	0.6	91	91		1961	4102	0	0	0	0	0	0	0
1	125	10	7.4	7.4	2	2		1968	4220	0	0	0	0	0	0	0
1	125	21	11.5	11.5	91	91		1845	4102	0	0	0	0	0	0	0
1	125	23	9.8	9.8	91	91		1959	4102	0	0	0	0	0	0	0
1	125	35	0.8	0.8	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	125	40	0.3	0.3	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	126	14	0.6	1.0	95	95	Comp WP_1	1989	0	0	4470	4511, 4560	0	0	0	5510
1	126	15	0.9	1.0	99	3	Convert WP_1	0	0	0	4470	4511, 4560	0	0	0	5510
1	126	17	2.7	2.0	82	82	Comp_WP_2	1895	0	0	4470	4511, 4560	0	0	0	5510
1	127	41	2.3	2.3	99	0		0	0	0	0	0	6131	0	0	0
1	127	42	1.5	1.5	99	0		0	0	0	0	0	6131	0	0	0
1	127	43	6.3	6.3	95	3	Convert WP	1950	4117	4431	4470	4511, 4560	0	0	0	0
1	127	55	0.7	0.7	99	0		0	0	0	0	0	6131	0	0	0
1	128	18	22.2	22.2	2	2		1961	4220	0	0	0	0	1220	0	0
1	128	25	0.7	1.0	99	3	Convert WP_1	0	0	0	0	4511, 4560	6080	0	0	0
1	128	26	6.0	6.0	99	0		0	0	0	0	0	6131	0	0	0

Dist	Alt_D Comp	Stnd	Treat Acres	Plant acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildl ife	Fire	Other Project	Riapri an
1	128	28	5.0	5.0	89	0		1915	0	0	0	0	0	0	3315 - Big Lake	0
1	128	60	1.1	1.1	89	0		1915	0	0	0	0	0	0	3315 - Big Lake	0
1	129	26	19.6	19.6	95	95		1940	4102	0	0	0	0	0	0	0
1	129	34	6.0	20.5	91	91		1968	4115	0	0	0	0	0	0	0
1	129	54	13.5	13.5	2	2		1905	4220	0	0	0	0	1213	0	0
1	129	58	3.6	3.6	99	0		0	0	0	0	0	6131	0	0	0
1	129	59	2.3	2.3	99	0		0	0	0	0	0	6131	0	0	0
1	129	60	2.3	2.3	99	0		0	0	0	0	0	6131	0	0	0
1	129	61	2.5	2.5	99	0		0	0	0	0	0	6131	0	0	0
1	129	62	4.1	4.1	99	0		0	0	0	0	0	6131	0	0	0
1	129	63	2.5	2.5	99	0		0	0	0	0	0	6131	0	0	0
1	129	64	2.9	2.9	99	0		0	0	0	0	0	6131	0	0	0
1	129	94	0.2	0.2	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	129	95	2.1	2.1	99	0		0	0	0	0	0	6131	0	0	0
1	129	96	1.2	1.2	99	0		0	0	0	0	0	6131	0	0	0
1	129	97	0.4	0.4	99	0		0	0	0	0	0	6131	0	0	0
1	129	98	1.1	1.1	99	0		0	0	0	0	0	6131	0	0	0
1	129	100	1.5	1.5	99	0		0	0	0	0	0	6131	0	0	0
1	129	102	13.2	13.2	2	2		1945	4220	0	0	0	0	1220	0	0
1	129	114	1.1	1.1	99	0		0	0	0	0	0	6131	0	0	0
1	129	137	0.4	0.4	99	1	Convert JP	0	0	0	0	0	6050	0	0	0
1	130	1	0.5	0.5	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	130	14	12.1	12.1	95	95		1948	4102	0	0	0	0	0	0	0
1	130	26	0.3	0.3	99	0		0	0	0	0	0	6131	0	0	0
1	130	42	1.3	1.3	99	0		0	0	0	0	0	6131	0	0	0
1	130	43	1.4	1.4	99	0		0	0	0	0	0	6131	0	0	0
1	131	1	7.4	7.4	2	2		1961	4220	0	0	0	0	0	0	0
1	131	11	1.8	1.8	99	1	Convert JP_RP	0	0	0	0	0	6080	0	0	0
1	131	13	20.4	20.4	2	2		1971	4220	0	0	0	0	0	0	0
1	131	18	3.8	3.8	98	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	131	27	1.9	1.9	99	0		0	0	0	0	0	6131	0	0	0

Dist	Alt_D Comp	Stnd	Treat Acres	Plant acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildl ife	Fire	Other Project	Riapri an
1	131	28	1.1	1.1	99	0		0	0	0	0	0	6131	0	0	0
1	131	29	1.3	1.3	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	131	30	2.0	2.0	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	131	31	1.9	1.9	99	0		0	0	0	0	0	6131	0	0	0
1	131	32	4.7	4.7	2	2		1962	4220	0	0	0	0	0	0	0
1	131	51	0.6	0.6	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	132	5	3.7	1.0	95	95	Comp_WP_1	1986	0	0	4470	4511, 4560	0	0	0	5510
1	132	7	32.7	8.0	82	82	Comp_WP_8	1922	0	0	4470	4511, 4560	0	0	0	5510
1	132	13	14.4	14.4	2	2		1944	4220	0	0	0	0	0	0	0
1	132	15	15.7	15.7	91	91		1929	4193	0	0	0	0	0	0	0
1	132	25	20.7	20.7	2	2		1969	4220	0	0	0	0	0	0	0
1	132	31	0.7	0.7	99	0		0	0	0	0	0	6131	0	0	0
1	132	32	11.9	11.9	2	2		1962	4220	0	0	0	0	0	0	0
1	132	38	1.6	1.6	99	0		0	0	0	0	0	6131	0	0	0
1	132	39	2.8	2.8	99	0		0	0	0	0	0	6131	0	0	0
1	132	40	1.0	1.0	99	0		0	0	0	0	0	6131	0	0	0
1	132	41	0.9	0.9	99	0		0	0	0	0	0	6131	0	0	0
1	132	42	0.9	0.9	99	3	Convert WP WS	0	0	0	4470	4511, 4560	0	0	0	5510
1	132	43	0.6	0.6	99	15	Convert TA_elm_oak	0	0	0	0	4511, 4560	6080	0	0	0
1	132	44	2.2	2.2	99	0		0	0	0	0	0	6131	0	0	0
1	132	46	9.6	9.6	91	91		1964	4102	0	0	0	0	0	0	0
1	132	56	0.3	0.3	99	0		0	0	0	0	0	6131	0	0	0
1	133	5	9.9	9.9	2	2		1944	4220	0	0	0	0	0	0	0
1	133	6	56.0	56.0	2	2		1969	4220	0	0	0	0	0	0	0
1	133	7	58.7	58.7	2	2		1944	4220	0	0	0	0	0	0	0
1	133	17	7.3	7.3	2	2		1961	4220	0	0	0	0	0	0	0
1	133	25	0.8	0.8	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	133	26	1.3	1.3	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	133	27	5.5	5.5	2	2		1961	4220	0	0	0	0	0	0	0
1	133	47	2.1	2.1	2	2		1969	4220	0	0	0	0	0	0	0
1	133	48	0.4	0.4	99	0		0	0	0	0	0	0	0	3315 -	0

Dist	Alt_D Comp	Stnd	Treat Acres	Plant acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildl ife	Fire	Other Project	Riapri an
															Temp Road	
1	133	51	0.7	0.7	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	133	53	2.0	2.0	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	133	60	2.2	2.2	2	2		1944	4220	0	0	0	0	0	0	0
1	133	84	9.3	9.3	91	91		1974	0	0	0	0	0	0	3315 - Temp Road	0
1	135	31	4.2	4.2	2	1	Convert JP	1902	4117	4431	4470	4511, 4560	0	0	0	0
1	135	38	15.9	15.9	91	91		1937	4102	0	0	0	0	0	0	0
1	135	41	0.3	0.3	99	0		0	0	0	0	0	6131	0	0	0
1	135	42	57.9	57.9	2	2		1967	4220	0	0	0	0	0	0	0
1	135	106	3.8	3.8	2	2		1960	4220	0	0	0	0	0	0	0
1	137	78	0.3	0.3	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
1	138	1	23.0	23.0	2	0		1906	0	0	0	0	0	1213	0	0
1	138	2	45.9	45.9	2	2		1903	4220	0	0	0	0	1213	0	0
1	138	3	0.1	0.1	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	138	4	0.1	0.1	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	138	5	6.6	6.6	2	0		1903	0	0	0	0	0	1213	0	0
1	138	7	29.0	29.0	91	91		1928	4102	0	0	0	0	0	0	0
1	138	16	10.3	10.3	2	2		1903	4220	0	0	0	0	1213	0	0
1	138	19	1.9	1.9	99	91	Convert A	0	0	0	0	0	6050	0	0	0
1	138	23	1.1	1.1	99	0		0	0	0	0	0	6131	0	0	0
1	139	17	1.9	1.9	99	3	Convert WP	0	0	0	0	4511, 4560	6080	0	0	0
2	5	50	2.3	2.3	99	0		0	0	0	0	0	6131	0	0	0
2	5	51	12.9	12.9	99	0		0	0	0	0	0	6131	0	0	0
2	5	53	2.1	2.1	99	0		0	0	0	0	0	6131	0	0	0
2	5	81	0.4	0.4	98	91	Convert A	0	0	0	0	0	6050	0	0	0
2	5	83	2.2	2.2	99	0		0	0	0	0	0	6131	0	0	0
2	7	24	11.8	11.8	2	2		1971	4220	0	0	0	0	1220	0	0
2	7	116	6.9	6.9	2	2		1963	4220	0	0	0	0	1220	0	0
2	11	10	66.1	66.1	91	89	Convert NH	1949	4151	0	0	0	0	0	0	0
2	11	22	28.9	28.9	2	2		1902	4220	0	0	0	0	1213	0	0

Dist	Alt_D Comp	Stnd	Treat Acres	Plant acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildlife	Fire	Other Project	Riparian
2	11	160	27.2	27.2	2	2		1884	4220	0	0	0	0	1213	0	0
2	12	19	49.4	10.0	91	89	Convert NH Comp_WP_10	1912	4152	4431	0	4511, 4560	0	0	0	0
2	12	24	1.7	1.0	99	3	Convert WP_fruiting_shrub_2	0	0	0	0	4511, 4560	6080	0	0	0
2	13	6	12.3	12.3	82	82		1933	4193	0	0	0	0	0	0	0
2	14	7	13.2	13.2	2	2		1930	4220	0	0	0	0	1213	0	0
2	14	12	49.8	49.8	2	0		1897	0	0	0	0	0	1113	0	0
2	14	17	17.0	17.0	91	3	Convert WP RP	1950	4117	4431	4470	4511, 4560	0	0	0	0
2	14	26	3.1	3.1	91	2	Convert RP WP	1936	4117	4431	4470	4511, 4560	0	0	0	0
2	14	31	23.1	23.1	2	0		1900	0	0	0	0	0	1113	0	0
2	14	33	27.4	27.4	91	54	Convert oak	1916	4193	0	0	0	0	0	0	0
2	14	34	20.5	20.5	91	89	Convert NH	1916	4193	0	0	0	0	0	0	0
2	14	39	29.9	29.9	3	0		1900	0	0	0	0	0	1113	0	0
2	14	40	6.4	3.0	91	91	Comp_WP_3	1928	4193	4431	0	4511, 4560	0	0	0	0
2	14	41	8.5	8.5	2	0		1900	0	0	0	0	0	1113	0	0
2	14	43	9.8	9.8	91	89	Convert NH	1916	4193	0	0	0	0	0	0	0
2	14	55	23.0	23.0	89	89		1950	4151	0	0	0	0	0	0	0
2	15	10	3.2	3.2	99	0		0	0	0	0	0	0	1113	0	0
2	15	11	43.2	43.2	91	89	Convert NH	1946	4220	0	0	0	0	0	0	0
2	15	14	23.5	23.5	2	0		1907	0	0	0	0	0	1113	0	0
2	15	17	19.4	19.4	2	0		1910	0	0	0	0	0	1113	0	0
2	15	21	28.9	28.9	2	0		1907	0	0	0	0	0	1113	0	0
2	15	31	88.6	88.6	2	0		1896	0	0	0	0	0	1113	0	0
2	15	32	28.5	28.5	2	0		1900	0	0	0	0	0	0	3315 - Winnie Parking	0
2	15	36	3.4	3.4	97	0		0	0	0	0	0	0	1113	0	0
2	15	64	4.8	4.8	95	89	Convert NH	1946	4220	0	0	0	0	0	0	0
2	20	12	2.5	2.5	99	0		0	0	0	0	0	6131	0	0	0
2	20	19	10.6	10.6	95	16	Convert WS	1929	4117	4431	4470	4511	0	0	0	0
2	20	29	1.3	1.3	99	0		0	0	0	0	0	6131	0	0	0

Dist	Alt_D Comp	Stnd	Treat Acres	Plant acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildl ife	Fire	Other Project	Riapri an
2	20	31	0.7	0.7	99	0		0	0	0	0	0	6131	0	0	0
2	20	86	0.9	0.9	99	2	Convert RP	0	0	0	0	4511	6080	0	0	0
2	21	29	2.0	2.0	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
2	22	43	0.6	0.6	99	0		0	0	0	0	0	6131	0	0	0
2	24	6	2.8	2.8	99	0		0	0	0	0	0	6131	0	0	0
2	24	29	1.8	1.8	99	89	Convert NH	0	0	0	0	0	6050	0	0	0
2	24	63	1.3	1.3	99	0		0	0	0	0	0	6131	0	0	0
2	24	64	1.9	1.9	99	0		0	0	0	0	0	6131	0	0	0
2	24	65	1.9	1.9	99	0		0	0	0	0	0	6131	0	0	0
2	24	66	1.3	1.3	99	0		0	0	0	0	0	6131	0	0	0
2	24	89	0.5	0.5	99	91	Convert A	0	0	0	0	0	6050	0	0	0
2	24	102	0.8	0.8	99	0		0	0	0	0	0	6131	0	0	0
2	24	106	0.2	0.2	98	89	Convert NH	0	0	0	0	0	6050	0	0	0
2	24	111	0.2	0.2	98	91	Convert A	0	0	0	0	0	6050	0	0	0
2	24	112	2.7	2.7	98	71	Convert Ash	0	0	0	0	0	6050	0	0	0
2	25	32	2.8	2.8	99	0		0	0	0	0	0	6131	0	0	0
2	25	33	2.0	2.0	99	0		0	0	0	0	0	6131	0	0	0
2	25	45	2.4	2.4	99	0		0	0	0	0	0	6131	0	0	0
2	25	135	0.5	0.5	99	91	Convert A	0	0	0	0	0	6050	0	0	0
2	26	6	3.6	3.6	2	2		1962	4220	0	0	0	0	1220	0	0
2	26	29	10.1	10.1	2	2		1964	4220	0	0	0	0	0	0	0
2	26	32	25.0	25.0	2	2		1966	4220	0	0	0	0	0	0	0
2	26	42	32.2	32.2	89	89		1953	4193	0	0	0	0	0	0	0
2	26	46	6.0	6.0	92	2	Convert RP	1937	4220	0	0	0	0	0	0	0
2	26	64	33.3	33.3	91	91		1946	4115	0	0	0	0	0	0	0
2	26	66	28.9	28.9	91	91		1939	4115	0	0	0	0	0	0	0
2	26	103	3.8	3.8	2	2		1964	4220	0	0	0	0	1220	0	0
2	26	105	2.7	2.7	71	91	Convert A	1937	4102	0	0	0	0	0	0	0
2	26	167	4.6	4.6	95	2	Convert RP	1991	4220	0	0	0	0	0	0	0
2	26	177	0.6	0.6	2	2		1965	4220	0	0	0	0	1220	0	0
2	26	181	18.3	18.3	2	2		1958	4220	0	0	0	0	0	0	0
2	34	11	3.6	3.6	99	16	Convert WS_TA	0	0	0	0	4511	6080	0	0	0
2	34	22	1.2	1.2	99	15	Convert TA_elm_oak_fruiting shrubs	0	0	0	0	4511	6080	0	0	0

Dist	Alt_D Comp	Stnd	Treat Acres	Plant acres	For. Type	Future Type	Convert?	Year	Harvest	Regen	Site Prep	TSI	Wildl ife	Fire	Other Project	Riapri an
2	36	4	4.8	1.0	91	91	comp_WP_1	1909	4102	4431	0	4511, 4560	0	0	0	0
2	36	8	23.3	23.3	2	2		1920	4220	0	0	0	0	0	0	0
2	36	9	8.3	8.3	2	2		1920	4220	0	0	0	0	1230	0	0
2	37	37	0.4	0.4	99	91	Convert A	0	0	0	0	0	6050	0	0	0
2	38	14	0.4	0.4	98	2	Convert RP	0	0	0	0	4511	6080	0	0	0
2	38	41	1.3	1.3	99	1	Convert JP	0	0	0	0	4511, 4560	6080	0	0	0
2	39	10	1.7	1.7	99	98	Convert fruiting shrubs	0	0	0	0	4511	6080	0	0	0
2	39	74	0.3	0.3	99	91	Convert A	0	0	0	0	0	6050	0	0	0
2	40	3	25.2	25.2	92	92		1916	4131	0	4490	0	0	0	0	0
2	40	4	3.0	3.0	91	0		1989	0	0	0	0	0	0	3315 - Temp Road	0
2	40	5	10.3	10.3	91	0		2004	0	0	0	0	0	0	3315 - Temp Road	0
2	40	7	10.3	10.3	2	2		1980	4220	0	0	0	0	0	0	0
2	40	8	0.6	0.6	99	0		0	0	0	0	0	6131	0	0	0
2	40	9	4.5	4.5	99	2	Convert RPJPWS	0	0	0	4470	4511, 4560	6080	0	0	0
2	41	1	1.2	1.2	99	91	Convert A	0	0	0	0	0	6050	0	0	0
2	41	5	24.0	24.0	2	2		1977	4220	0	0	0	0	0	0	0
2	43	12	1.5	1.5	98	91	Convert A	0	0	0	0	0	6050	0	0	0
2	44	8	15.1	15.1	71	0		1915	0	0	0	0	0	0	3315 - Toilet	0

END OF ALTERNATIVE D

APPENDIX E - PROJECT RECORD INDEX

Kitchi Resource Management EA

This is in the Specialist Report EA (PR# 480). It is not included here in the EA due to length.

APPENDIX F: GLOSSARY

This is in the Specialist Report EA (PR# 480). Most of it is not included here in the EA due to length.

Items were retained where they are important for interpreting some of the tables and discussions in the EA.

Definitions from FACTS database and FACTS codes (From Chippewa Website)
(Only codes used in KRM EA are here.)

4102 Coppice cut with leave trees (EA/RN/FH)
Regeneration method where the majority of regeneration is from stump sprouts or root suckers. Essentially all trees in the stand are cut. Reserve trees are retained to attain goals other than regeneration, but reserve trees are not enough to become the featured stand or to create a two-aged stand. The desired future condition is an even-aged stand. Coppice cuts are considered final harvests (See FSH 1909.12 - 60.5).

4115 Patch clearcut with leave trees (EA/RH/FH)
A type of stand clearcutting where patches (or strips) are clearcut within an individual stand boundary in two or more entries to produce an even-aged stand. As even-aged, the range of tree ages is usually less than 20 percent of the rotation after harvest of all patches. A minor (less than approximately 10% of full stocking) live component may be retained for reasons other than regeneration. All types of clearcuts are considered final harvests (See FSH 1909.12 - 60.5). Regeneration can be from natural seeding, direct seeding, planted seedlings or advance reproduction.

4117 Stand clearcut with leave trees (EA/RH/FH)
An even-aged regeneration or harvest method that removes most trees in the stand producing an exposed microclimate for the development of a new age class in one entry. A minor (less than approximately 10% of full stocking) live component is retained for reasons other than regeneration. Regeneration can be from natural seeding, direct seeding, planted seedlings or advance reproduction.

4131 Shelterwood establishment cut (EA/RN/NFH)
A type of cut that removes trees except those needed for the purposes of shelter and or seed production. Prepares the seed bed and creates a new age class in a moderated microenvironment. Additional trees may be retained to provide a minor (less than approximately 10% of full stocking) live component after the removal cut for reasons other than regeneration. The majority of regeneration is from natural seeding, direct seeding, planted seedlings or advance reproduction. Overwood is removed once regeneration is established. Since there are always leave trees in a shelterwood establishment cut, there is not an activity code for shelterwood establishment cut with leave trees.

TWO-AGED METHODS

4193 Two-aged shelterwood establishment and removal cut with reserves (2A/RN/NFH)
A two-aged regeneration method where the cutting of most trees Prepares the seed bed and leaves those

trees needed to produce sufficient shade to produce a new age class in a moderated microenvironment. This is both the establishment and the final removal harvest since the overwood trees would be retained to create a two- aged stand (at least 10% of full stocking). Regeneration may come from any source, but the majority of regeneration is from natural seeding, direct seeding, planted seedlings or advance reproduction. The desired future condition is a two-aged or multi-aged stand.

UNEVEN-AGED METHODS

4151 Single-tree selection cut (UA/RN/NFH)
Uneven-aged regeneration method. Individual trees of all size classes are removed more or less uniformly throughout the stand. The intent is two-fold; to promote growth of remaining trees, and to provide space for regeneration. Regeneration is an objective of each entry. Uneven-aged management of hardwoods using a Q-factor is an example. Regeneration may be a combination of natural seeding, direct seeding, planted seedlings, advance reproduction, sprouts and suckers. The desired future condition is an uneven-aged stand. Selection cuts are considered final harvests (See FSH 1909.12 - 60.5).

4152 Group selection cut (UA/RN/FH)
Uneven-aged regeneration method. Trees are removed and new age classes are established in small groups. Maximum width of groups is commonly approximately twice the height of the mature trees with smaller openings providing microenvironments suitable for tolerant regeneration and larger openings providing conditions suitable for more intolerant regeneration. The stand consists of an aggregation of groups. Individual trees in the matrix may or may not be harvested to provide improved growing conditions for remaining trees. Multiple entries of this activity ultimately results in an uneven-aged stand of 3 or more age classes.

Regeneration may be a combination of natural seeding, direct seeding, planted seedlings, advance reproduction sprouts and suckers. The desired future condition is maintenance of an uneven-aged stand. Selection cuts are considered final harvests (See FSH 1909.12 - 60.5) Regeneration is an objective of each entry.

NOT REGENERATION METHODS

4220 Commercial Thinning
An intermediate harvest with the objective of reducing stand density primarily to improve growth, enhance forest health, or recover potential mortality while producing merchantable material. Material is at least equal to the value of the direct costs of harvesting. Stand regeneration is never an objective of a thinning. Thinnings do not create reforestation needs and are not final harvests.

4231 Salvage cut
An intermediate harvest removing trees which are dead or dying because of injurious agents other than competition, to recover economic value that would otherwise be lost. Stand regeneration is never an objective of a salvage cut. If cutting would be heavy enough to begin the regeneration process prescribe a regeneration harvest (FSM 2471.31). If both salvage and sanitation are taking place at the same time these harvests should be called sanitation, 4232.

Treatment Codes for Appendix D

Treatment Code	definition
Andrusia Parking	New parking lot for the Andrusia Boat Landing
Bass Lake Road	Close or Fix the road that accesses Bass Lake
Big Lake	New parking lot for Big Lake Boat Landing
Canoe Road	Upgrade the road leading to the Pimushe Lake/North Turtle River canoe landing so automobiles do not get high-centered or stuck
Gravel Pit Rehab	Rehabilitate a small gravel pit, back to forested conditions
Temp Road	Temporary road
Toilet	Star Island Toilet construction
Winnie Parking	New parking lot for the Winnie Boat Landing
comp_WP_1, etc	Planting a component of a selected species in a stand of a different forest type. The number is the number of acres planted.
Convert A	Convert the stand's forest type to aspen
Convert Ash	Convert the stand's forest type to black ash
Convert fruiting shrubs	Convert the stand's forest type to fruiting shrubs
Convert JP	Convert the stand's forest type to jack pine
Convert JP_RP	Convert the stand's forest type to a combination of jack pine and red pine
Convert NH	Convert the stand's forest type to mixed northern hardwoods
Convert NH Comp_WP_10	Convert the stand's forest type to mixed northern hardwoods with a component of planted white pine on 10 acres
Convert oak	Convert the stand's forest type to oak
Convert RP	Convert the stand's forest type to red pine
Convert RP WP	Convert the stand's forest type to a combination of red and white pines
Convert RPJPWS	Convert the stand's forest type to a combination of red, jack, and white pines
Convert TA	Convert the stand's forest type to tamarack
Convert TA_elm_oak	Convert the stand's forest type to a combination of tamarack, elm, and oak
Convert TA_elm_oak_fruiting shrubs	Convert the stand's forest type to a combination of tamarack, elm, oak, and fruiting shrubs
Convert TA_elm_oak_WP	Convert the stand's forest type to a combination of tamarack, elm, oak, and white pine
Convert WP	Convert the stand's forest type to white pine
Convert WP RP	Convert the stand's forest type to a combination of white and red pine
Convert WP WS	Convert the stand's forest type to a combination of white pine and white spruce
Convert WP_1	Convert the stand's forest type to white pine on 1 acre
Convert WP_fruiting_shrub_2	Convert the stand's forest type to a combination of white pine and fruiting shrubs
Convert WP_RP	Convert the stand's forest type to a combination of white pine and red pine
Convert WS	Convert the stand's forest type to white spruce
convert WS_fruiting shrubs	Convert the stand's forest type to a combination of white spruce and fruiting shrubs
Convert WS_TA	Convert the stand's forest type to white spruce and tamarack

Forest Type Codes for Appendix D

Forest Type Code	Species	Abbreviation of this species
1	jack pine	JP
2	red pine	RP
3	white pine	WP
11	fir/spruce	Fir
12	black spruce - lowland	BS
14	northern white cedar	NWC
15	tamarack	TA or Tama
16	white spruce	WS
71	black ash	BA
82	sugar maple/basswood	SM
89	mixed northern hardwoods	NH or MNH
91	quaking aspen	A
92	paper birch	PB
94	balsam poplar	
95	aspen/spruce	A
97	lowland opening	Open
98	upland opening	Open
99	opening - undifferentiated	Open

APPENDIX G: ROADS RECOMMENDATIONS

Cass Lake, Rambling Woods, Winnie, and Northwoods EAs from the recent past in the KRM EA area had recommendations for changes to the transportation system, not all of which have been carried out yet. No further changes to the road system are being proposed in the KRM EA.

APPENDIX H: MITIGATING MEASURES, DESIGN FEATURES, AND BEST MANAGEMENT PRACTICES FOR KRM EA

Listed below are special measures that are needed in the design and implementation of the treatments in the KRM area projects. They do not include most measures that are in the Voluntary Guidelines (Gold Book) (PR# 72b) or the Forest Plan (PR# 72). It is expected and assumed that measures from these two documents would be followed. Following are measures that are over and above them and that need to be implemented in order to have the effects listed in this EA. They are also listed in the prescriptions, which would be developed as the analysis is completed. (PR#).

Vegetation

General (not listed in prescriptions):

Specific and Listed on Prescriptions:
The following statement was added to all harvest prescriptions to allow the timber markers to make room for large harvesting equipment ", however cut individual trees of any species as needed to facilitate operations" or "In addition, individual trees of other species may be cut as needed to facilitate the operation of harvesting equipment in the stand."

In some stands where visibility is low and merchantable trees are patchy, "Try to layout during leaf-off because there may be areas to exclude."

For various reasons most harvested stands would have "Reserve Trees". The species and numbers would be determined on a stand by stand basis for the visual, wildlife, or silvicultural reason associated with each stand, e.g. visual buffers, future snags, or diversity. Occasionally there would be enough trees of desirable species to want "Reserve Areas", e.g. near wetlands, inclusions of very young trees, unmerchantable trees, or unusual species for the stand.

Wildlife

Northern Goshawk

ACGE 1 -- There would be no ground disturbing activities (timber harvest, prescribed fire, road construction, etc.) within the nesting and post-fledging areas during the breeding season, which lasts from March 1 - August 31. See Forest Plan G-WL-24

ACGE 2 -- Maintain at least 50% canopy closure in stands proposed for thinning and 2-aged shelterwood treatment within the foraging zone of all territories.

ACGE 3 -- If present, leave at least 2-5 down logs greater than 12” DBH/acre. If these are not present, then leave down logs between 6-12” DBH.

ACGE 4 -- If a new stick nest is discovered in the project area during timber sale layout and marking operations, then harvest would be deferred within 860 feet until spring call-playback surveys can verify species occupancy. If the stick nest remains unoccupied, then the nest tree would be reserved within an undisturbed legacy patch. If a new occupied goshawk breeding territory is verified, then the nesting, post-fledging, and foraging areas in this new territory would be analyzed. Proposed treatments may have to be

altered or stands may have to be dropped, in order to avoid impacts that could cause the abandonment of the territory.

Northern Goshawk Foraging Zone Mitigations

Comp	Stand	Acres	Forest Type	Harvest Type	Mitigation Measures
78	38	19.2	Paper Birch	2-aged Shelterwood – Convert to NH	Maintain at least 50% canopy closure - Alts. B, C, and D
78	20	8.9	Aspen	2-aged Shelterwood	Maintain at least 50% canopy closure - Alts. B, C, and D
78	57	8.7	Aspen	2-aged Shelterwood – Convert to NH	Maintain at least 50% canopy closure - Alts. B, C, and D
78	3	17.5	Aspen	2-aged Shelterwood	Maintain at least 50% canopy closure - Alts. B, C, and D
78	77	2.8	Aspen	2-aged Shelterwood – Convert to NH	Maintain at least 50% canopy closure - Alts. B, C, and D
78	56	8.0	Aspen/BF	2-aged Shelterwood – Convert to NH	Maintain at least 50% canopy closure - Alts. B, C, and D
78	54	1.2	Aspen	2-aged Shelterwood	Maintain at least 50% canopy closure - Alts. B, C, and D
86	31	58.3	WS/BF	Thinning	Maintain at least 50% canopy closure - Alts. B, C, and D
7	116	6.9	Red Pine	Thinning	Maintain at least 50% canopy closure - Alts. B, C, and D
7	24	11.8	Red Pine	Thinning	Maintain at least 50% canopy closure - Alts. B, C, and D
11	22	28.9	Red Pine	Thinning/Underburn	Maintain at least 50% canopy closure - Alts. C and D
11	160	27.2	Red Pine	Thinning/Underburn	Maintain at least 50% canopy closure - Alts. C and D
26	103	3.8	Red Pine	Thinning	Maintain at least 50% canopy closure - Alts. B, C, and D
11	7	20.3	Red Pine	Thinning	Maintain at least 50% canopy closure - Alt.C
13	6	12.3	Maple/Basswood	2-aged Shelterwood	Maintain at least 50% canopy closure - Alts. B, C, and D
14	1	7.7	Aspen	2-aged Shelterwood – Convert to Oak	Maintain at least 50% canopy closure - Alts. B and C
14	33	27.4	Aspen	2-aged Shelterwood – Convert to Oak	Maintain at least 50% canopy closure - Alts. B, C, and D
14	34	20.5	Aspen	2-aged Shelterwood – Convert to NH	Maintain at least 50% canopy closure - Alts. B, C, and D
14	43	9.8	Aspen	2-aged Shelterwood – Convert to NH	Maintain at least 50% canopy closure - Alts. B, C, and D
14	7	13.2	Red Pine	Thinning/Underburn	Maintain at least 50% canopy closure - Alts. B and C
14	40	6.4	Aspen	2-aged Shelterwood	Maintain at least 50% canopy closure - Alts. B, C, and D
15	11	43.2	Aspen	Thinning – Convert to NH	Maintain at least 50% canopy closure - Alts. B, C, and D

Bald Eagle

HALE1 No ground disturbing activities within 5 chains (100m) (330 feet) of an eagle nest unless the project will benefit the nest stand.

HALE2: All ground disturbing activities within 10 chains (200m) (660 feet) of an active nest are seasonally restricted to 10/1-2/14.

Bald Eagle Mitigations

Comp.	Stand	Acres	Forest Type	Harvest Type	Mitigation Measures
86	21	16.9	Red Pine	Thinning	Timing restriction if active nest- 2/15-9/30 – 200m
86	62	0.4	Opening	Mowing	Timing restriction if active nest- 2/15-9/30 – 200m
131	1	7.4	Red Pine	Thinning	Timing restriction if active nest- 2/15-9/30 – 200m - No treatment within 100m of nest
117	50	1.8	Opening	Convert to WP/RP	Timing restriction if active nest- 2/15-9/30 – 200m
86	43	1.4	Opening	Convert to TA/Elm/Oak/WP	Timing restriction if active nest- 2/15-9/30 – 200m
86	185	0.6	Opening	Convert to TA/Elm/Oak/WP	Timing restriction if active nest- 2/15-9/30 – 200m
86	186	0.4	Opening	Convert to TA/Elm/Oak/WP	Timing restriction if active nest- 2/15-9/30 – 200m
13	25	35.6	Aspen	Group Selection – Convert to NH/Plant WP	Timing restriction if active nest- 2/15-9/30 – 200m - No treatment within 100m of nest
14	33	27.4	Aspen	2-aged Shelterwood – Convert to Oak	Timing restriction if active nest- 2/15-9/30 – 200m
14	34	20.5	Aspen	2-aged Shelterwood – Convert to NH	Timing restriction if active nest- 2/15-9/30 – 200m
15	31	88.6	Red Pine	Rx Burn	Remove all woody debris, ladder fuels, and fine fuels within the drip line (about 30' radius) of the nest tree. If the nest is active, debris removal will occur outside of the breeding season (10/1 – 2/14). If the nest is active, no burning from 2/15-8/15 or until young have fledged If the nest is active, no site preparation within 200m from 2/15- 10/1 If the nest is inactive, burning may take place during the breeding season. The nest will be monitored for 10 consecutive days prior to any burning to determine occupancy.

Great Gray Owl

GGO1 If a great gray owl nest is found within or adjacent to any stand proposed for harvest, a 20-acre no harvest zone would be maintained around the nest. No management activities would occur within 0.5 miles of an active nest from April 1 to August 31.

Black-backed Woodpecker

PIAR 1 There would be no activities in stands with known occurrences during the breeding season from March 1 to August 31. Spring burning would be allowed at any time, as any snags that are created by fire would improve black-backed woodpecker habitat.

PIAR 2 Any known nests found during project implementation will be protected from March 1 to August 31 with a 200 foot buffer until the young have fledged.

PIAR 3 Retain 6 to 10 jack pine (if they occur in the stand) per acre during regeneration harvest of mixed conifer stands.

PIAR 4 Protect all snags greater than 4" DBH except where safety is a concern. See Forest Plan O-WL-26

Black-backed Woodpecker Mitigations

Comp	Stand	Acres	Forest Type	Harvest Type	Mitigation Measures
12	19	49.4	Aspen	Group Selection – Convert to NH	If present, retain flaky barked conifers- Alts. B, C, and D
88	23	55.7	Aspen	Patch Cut	If present, retain flaky barked conifers- Alts. B and C
88	115	28.4	Aspen	Patch Cut	If present, retain flaky barked conifers- Alts. B and C
88	9	64.8	Aspen	Patch Cut	If present, retain flaky barked conifers- Alts. B and C
14	8	33.7	Red Pine	Thinning	Timing restriction 3/1 – 8/31- Alts. B and C

Osprey

Comp	Stand	Acres	Forest Type	Harvest Type	Mitigation Measures
9	112	1.3	BF/Aspen/PB	Clearcut	Timing restriction if nest is active- 4/1 – 8/15- 100m No treatment within 100' of nest. Protect all snags >12" DBH- Alts. B and C
9	1	22.5	BF/Aspen/PB	Clearcut	Timing restriction if nest is active- 4/1 – 8/15- 100m. Protect all snags >12" DBH- Alts. B and C

Large Mature Upland Patch Mitigations

Comp.	Stand	Acres	Forest Type	Harvest Type	Mitigation Measures
14	8	33.7	Red Pine	Thinning	Maintain at least 50% canopy closure- Alts. B and C
15	29	7.8	Paper Birch	Thinning	Maintain at least 50% canopy closure- Alts. B and C
15	64	4.8	Aspen/BF	2-aged Shelterwood	Maintain at least 50% canopy closure- Alts. B, C, and D
26	29	10.1	Red Pine	Thinning	Maintain at least 50% canopy closure- Alts. B, C, and D
26	42	32.2	Northern Hardwoods	Thinning	Maintain at least 50% canopy closure- Alts. B, C, and D
26	181	18.3	Red Pine	Thinning	Maintain at least 50% canopy closure- Alts. B, C, and D
128	14	13.8	Paper Birch	2-aged Shelterwood	Maintain at least 50% canopy closure- Alts. B and C
128	18	22.2	Red Pine	Thinning	Maintain at least 50% canopy closure- Alts. B, C, and D
129	54	13.5	Red Pine	Thinning	Maintain at least 50% canopy closure- Alts. C and D
129	102	13.2	Red Pine	Thinning	Maintain at least 50% canopy closure- Alts. C and D
130	18	32.8	Maple/Basswood	2-aged Shelterwood	Maintain at least 50% canopy closure- Alts. B and C
132	15	15.7	Aspen	2-aged Shelterwood	Maintain at least 50% canopy closure- Alts. B and C

Mitigation RFSS plants

If any sensitive plant species in encountered during project planning, layout or implementation, postpone any ground disturbing activity and notify Forest Botanist.

The project as proposed does not comply with Forest Plan Standard WL-7. Dropping harvest activity as specified in Table 7 should bring the project in line with Forest Plan Standards.

Table 7, Recommendations for Goblin fern habitat Forest Plan compliance

dist	comp	stand	ACTIVITY	B. mormo present?	notes	good habitat?	recommendation
1	88	9	Coppice cut (w/res)	n	not impacted by worms	y	keep 70 pct canopy, group selection ok, see S-WL-7(d)
1	88	23	Coppice cut (w/res)	y		y	drop
1	88	115	Coppice cut (w/res)	y		y	drop
1	129	34	Coppice cut (w/res)	y	most of stand outside habitat area	y	cut half
1	129	36	Coppice cut (w/res)	y	mesic hardwood	y	drop
1	129	81	Coppice cut (w/res)	n	mesic hardwood	y	drop
2	26	64	Patch clearcutting (w/res)	y		y	drop

Fire

General (not listed in prescriptions):

Specific and Listed on Prescriptions:

Most stands proposed for prescribed burning in this EA are comprised of light to moderate fuels leading to a short residence time for fire on the landscape and therefore short duration smoke events.
As much as is possible the units would be burnt while fine fuels are cured and dormant.
The majority of the fuels would be consumed in the flaming front.
Rapid mop up would be employed to limit residual smoke emissions from the burn unit and smoldering combustion.

Soils
General (not listed in prescriptions):

Table 3.14.2.a -- Recommended Design Features and/or Mitigation Measures to Address Soil Concerns -- Forest Plan and MFRC Guidelines – Codes and Descriptions

Code *	Purpose	Action	Application
G-WS-10	To maintain soil nutrients	Retain or return fine slash (< 3 inches in diameter) well distributed over the site	Low nutrient soils – excessively well to well drained sands
G-WS-8F	To prevent soil compaction	Harvest during frozen ground conditions	Somewhat poorly to very poorly drained soils
G-WS-8D	To prevent soil compaction	Harvest during dry or frozen ground conditions	Well drained to moderately well drained loamy soil textures
G-WS-8A	To prevent soil compaction	Harvest in all seasons except spring break-up and periods of prolonged rainfall	Moderately well to excessively well drained sandy soil textures
B-WS-1	Soil nutrient retention	Scarification of soil for site preparation should not result in excessive movement of soil	Sites selected for mechanical site preparation

Code *	Purpose	Action	Application
B-WS-2	To prevent soil compaction	Time site preparation activities and use proper equipment to minimize rutting and compaction of soil	Sites selected for mechanical site preparation
G-WS-8M	Soil erosion prevention	Site preparation practices should avoid channeling water downhill	Mechanical site preparation on steep slopes
G-WS-8S	Soil erosion prevention	When harvesting on steep slopes avoid a continuous downhill path that will channel water. If unavoidable, apply slash and/or water bars on the path	Harvesting on steep slopes

* G – FP Guideline, D – Design Feature, M – Mitigation Measure, B – MFRC Gold Book

Extra care should be taken with harvesting and site preparation equipment on these steeper slopes. A main skid trail on a steep slope should be avoided. If skid trails on steep slopes can't be avoided, soil erosion would be minimal as long as water bars, dips, and slash on the trails are properly installed.

Specific and Listed on Prescriptions:

Riparian
General (not listed in prescriptions):
Special treatments for riparian areas apply to harvest activities within the Riparian Management Zone (RMZ). Vegetation management in the near bank RMZ favors long-lived species and harvest is done only to maintain or restore riparian ecological function.

Harvest design features for RMZ (100 & 200 foot zones) include everything from the Forest Plan and Voluntary Guidelines and more specifically:

a. Temporary roads would be obliterated.
b. Minimize crossing of intermittent or perennial streams with harvesting equipment. Protect streambed and streambanks if crossing is necessary.
c. Forest management activities would not take place in wetlands.
d. Seasonal ponds/vernal pools would be protected by not driving equipment through them and not leaving tops or slash in them.
e. Use filter strips where required.
f. Slopes would be protected on temporary roads and skid trails by creating water bars or dips where required.

Specific and Listed on Prescriptions:

Visual
General (not listed in prescriptions):

Specific and Listed on Prescriptions:
HIGH SIO - As visible from the affected travelway or use area: 25' removal, lop rest to 2', reserve trees and clumps as needed.

MEDIUM SIO - As visible from the affected travelway or use area: 25' removal, lop rest to 2'.

LOW SIO - As visible from the affected travelway or use area: 25' removal, lop remainder to 3'.

Heritage Resources
General (not listed in prescriptions):

Specific and Listed on Prescriptions:
Exclude known sites from harvest, yarding, or other ground disturbing activities. If burning do not disturb ground with firelines or heavy equipment.

Non-native Invasive Species (NNIS)

General (not listed in prescriptions):

Specific and Listed on Prescriptions:
1. Use timber sale contract clauses (BT6.35), for cleaning potentially infested equipment to help prevent the spread of NNIS.

2. Placement of skid trails, temporary roads, and landings should avoid occurrences of NNIS or crossing areas infested with NNIS.

3. Prior to exposing bare mineral soil during site preparation, the NNIS occurrence near each unit should be treated by mechanical means such as mowing or hand pulling to minimize the seed production while the soil is exposed.

4. Minimize the spread of NNIS by using non-infested gravel sources.

5. Rapidly revegetate exposed bare mineral soil to minimize seeding-in by NNIS.

6. Rapid treatment of new infestations as they are found.

APPENDIX I: SUMMARY TABLE FOR KRM EA

(This is the same table as in Section 2.2.5.)

The totals in this table do not always add up or may not agree with the Alternative tables due to rounding errors in the source documents. It is relatively common for totals to be 1 or 2 acres different.

Table APP I.a -- SUMMARY TABLE (Kitchi Resource Management EA (KRM) summary as of 04/12/2010)

Treatment	acres in Alt. B	Changes in Alternative C (from Alt. B)	acres in Alt. C	Changes in Alternative D (from Alt. C)	acres in Alt. D
Clearcutting (coppice cutting) (4102)	645 - A 573, PB 16, fir 27, ash 29	large patches (A) 77, goshawk (PB) 16, to 4115 (A) 168 (cut and 90 uncut), to 4193 (A) 57, small & tribal use (fir) 3, young aspen (A) 16, LRMA & tribe use (ash) 26	279 - A 253, fir 24, ash 3	osprey (fir) 24, goshawk (A) 40, patches (A) 33, old aspen 42, young aspen 12, to 4117 (A) 6, tribal concerns (A) 7	116 - A 113, ash 3
Clearcutting (patch cuts) (4115)	62 - A 62	from 4102 (A) 78	140 - A 140	patches/old A 72	68 - A 68
Clearcutting (4117)	486 - A 47, PB 8, JP 81, RP 351	drop old jack pine cuts 81, to UAM (RP) 65, drop for tribal concerns (RP) 12, to 4220 (RP) 259	69 - A 47, PB 8, RP 14	from 4102 (A) 6, old A in RP 10, tribal use (A) 16, tribal use (PB) 8	41 - A 37, RP 4
Shelterwood (4131)	68 - PB 68	drop Owre tract cut (PB) 20	49 - PB 49	drop for tribal concerns (PB) 23	25 - PB 25
Uneven-aged management (4151)	124 - NH 58, A 66	drop for BOMO (NH) 35	89 - NH 23, A 66	none	89 - NH 23, A 66
Uneven-aged management (4152)	309 - NH 132, A 119, PB 57	from 4117 (RP) 65	373 - NH 132, A 119, PB 57, RP 65	sugar maple 79 tribal use (A) 70, tribal use (PB) 57, tribal use (NH)	114 - A 49, RP 65

Treatment	acres in Alt. B	Changes in Alternative C (from Alt. B)	acres in Alt. C	Changes in Alternative D (from Alt. C)	acres in Alt. D
				54	
Two-aged shelterwood cutting (4193)	324 - A 161, PB 59, NH 101, RP 3	from 4102 (A) 57	381 - A 218, PB 59, NH 101, RP 3	sugar maple 57, patches (A) 8, tribal use (A) 26, tribal use (PB) 14, diversity (A) 57, diversity (PB) 26	193 - A 127, PB 19, NH 45, RP 3
Thinning (4220)	913 - RP 632, WP 7, WS 58, A 53, PB 14, ash 11, JP 139	from 4117 (RP) 259	1,172 - RP 891, WP 7, WS 58, A 53, PB 14, ash 11, JP 139	tribal use (ash) 11, (PB) 8, (JP) 139, (RP) 116	898 - RP 775, WP 7, WS 58, A 53, PB 6
Sanitation Harvesting: 4232	27 - PB 27	none	27 - PB 27	drop for tribal concerns 27	0
TOTAL HARVEST ACRES	**2,959**		**2,581**		**1,546**
Volume Harvested (80% of economic report)	**36,021 CCF**		**26,556 CCF**		**14,679 CCF**
Site preparation for planting (4470)	514	changes in sales	120	changes in sales	71
Site preparation for natural regeneration (4490)	58	changes in sales	25	none	25
Planting harvested stands (4431)	492 - JP 161, RP 285, WP 17, WS 11, Component WP 18	drop old jack pine 68, drop for tribal concerns (RP) 12, change 4117 to 4220 (RP) 260, change 4117 to 4152 (JP) to retain mature RP 55	97 - JP 29, RP 13, WP 17, WS 11, Component WP 18, Component JP 10	retain old A (RP) 10, diversity - WP not A (RP) 6, tribal concerns (JP) 24, tribal concerns Comp_WP_4	65 - JP 4, RP 3, WP 23, WS 11, Component WP 14, Component JP 10
Planting riparian zones (5510)	51 - WP 45, WPWS 1, RPJP 5	none	51 - WP 45, WPWS 1, RPJP 5	drop harvests by river for tribal concerns 36	15 - WP 14, WPWS 1
Planting wildlife openings (6080)	35 - WP 4, WPRP 2, WPfruiting shrub 2, RP 1,	none	35 - WP 4, WPRP 2, WPfruiting shrub 2, RP 1,	Access, size, not needed, better as	37 - WP 4, WPRP 2, WPfruiting shrub 2, RP 1,

Treatment	acres in Alt. B	Changes in Alternative C (from Alt. B)	acres in Alt. C	Changes in Alternative D (from Alt. C)	acres in Alt. D
	RPJPWS 5, JP 5, fruiting shrub 2, JPRP 2, TA 1, TAElmOak 6, TAElmOakFruitingShrubs 1, TAElmOakWP 2, WSTA 4		RPJPWS 5, JP 5, fruiting shrub 2, JPRP 2, TA 1, TAElmOak 6, TAElmOakFruitingShrubs 1, TAElmOakWP 2, WSTA 4	fruiting shrubs/conifers (6131 to 6080) - 4 stands - 2 acres	RPJPWS 5, JP 5, fruiting shrub 2, JPRP 2, TA 1, TAElmOak 6, TAElmOakFruitingShrubs 1, TAElmOakWP 2, WSTA 4, WSfruitingShrub 2
Total Planting	**578**		**183**		**117**
Stocking surveys for natural regeneration (4381, 4382, and 4384)	1,241		924		480
Stocking surveys for planting (4383)	852		531		244
Natural regeneration of wildlife openings (6050)	48 - NH 27, A 18, JP 1, ash 3	none	48 - NH 27, A 18, JP 1, ash 3	none	48 - NH 27, A 18, JP 1, ash 3
Maintain wildlife openings by mowing or burning (6131)	142	none	142	Access, size, not needed, better as fruiting shrubs/conifers (6131 to 6080) - 4 stands - 2 acres	140
Ecosystem burning (1113)	0	none	278	none	278
Wildfire if no ecoburning (double eco-burn)	556	drop wildfire	0	none	0
Fuels reduction - removal (1220)	605	changes in sales	306	changes in sales	133
Fuels reduction - underburn (1213)	43	Change fuels reduction in CC to ecoburn in thinning	169	none	169
Fuels reduction - pile burning (1230)	95	changes in sales	28	changes in sales	18
TSI - release (4511)	590	changes in sales	185	changes in sales	117
TSI - animal damage control (4560)	273 (WP 94, JP 173, and TA 6)	changes in sales	157 (WP 97, JP 54, and TA 6)	changes in sales	96 (WP 65, JP 25, and TA 6)
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Treatment	acres in Alt. B	Changes in Alternative C (from Alt. B)	acres in Alt. C	Changes in Alternative D (from Alt. C)	acres in Alt. D
Construct new Andrusia Boat Landing Parking Lot (3315) (2-36-5)	2	none	2	drop to analyze effects	0
Construct Star Island toilet (3315) (in 2-44-8)	1	none	1	none	1
Rehabilitate a gravel pit (3315) (1-86-128)	1	none	1	none	1
Upgrade Pimushe Lake canoe landing road (3315) (?)	1	none	1	none	1
Close Bass Lake road (3315) (in 1-83-19)	1	drop to look at effects of fixing road	0	re-add the closure	1
Fix the Bass Lake road (3315) (in 1-83-19)	0	add to look at effects of fixing road	1	re-drop	0
Enlarge Winnie Boat Landing Parking Lot (3315) (in 2-15-32)	1	none	1	none	1
Temporary Roads for timber sales (3315)	0.65 acres (7 segments)	none	0.65 acres (7 segments)	none	0.45 acres (5 segments)
Fix Big Lake boat landing for more parking (1-128-28/60)	1	none	1	none	1
Conversions					
Red pine to Jack Pine	69		4		4
Fir to Aspen/spruce	27		24		0
Ash to Aspen	29		3		3
Aspen to Jack Pine	16		16		0
Aspen/spruce to Red Pine	5		5		5
Aspen to Red Pine/White Pine	3		3		3
Aspen/spruce to White Pine	0		0		6
Aspen to White pine/Red	17		17		17

Treatment	acres in Alt. B	Changes in Alternative C (from Alt. B)	acres in Alt. C	Changes in Alternative D (from Alt. C)	acres in Alt. D
Pine					
Aspen to Oak	61		61		27
Aspen to Northern Hardwoods	271		328		201
Aspen/spruce to Northern Hardwoods	13		13		13
Aspen/spruce to White Spruce	11		11		11
Paper Birch to Jack Pine/Red Pine	8		8		0
Paper Birch to Red Pine	6		6		6
Paper Birch to Northern Hardwoods	124		124		19
Paper Birch to Aspen	16		0		0
Upland Opening to Aspen	18		18		18
Upland Opening to ash	3		3		3
Upland Opening to Northern Hardwoods	27		27		27
Upland Opening to White Pine	6		6		6
Upland Opening to White Pine/Fruiting Shrubs	2		2		2
Upland Opening to White Pine/White Spruce	1		1		1
Upland Opening to Jack Pine	7		7		7
Upland Opening to Jack pine/Red pine	2		2		2
Upland Opening to Red Pine/Jack Pine/White Spruce	5		5		5
Upland Opening to Red Pine	1		1		1
Upland Opening to White Pine/Red Pine	2		2		2
Upland Opening to Fruiting Shrubs	2		2		2
Upland Opening to	1		1		1

Treatment	acres in Alt. B	Changes in Alternative C (from Alt. B)	acres in Alt. C	Changes in Alternative D (from Alt. C)	acres in Alt. D
Tamarack					
Upland Opening to Tamarack/Elm/Oak	6		6		6
Upland Opening to Tamarack/Elm/Oak/fruiting shrubs	1		1		1
Upland Opening to Tamarack/Elm/Oak/WP	2		2		2
Upland Opening to WS/TA	4		4		4
Upland Opening to White Spruce/fruiting shrubs	0		0		2
TOTAL conversions	766		713		407
Add a Component of White Pine in other forest types	12		12		12
Add a Component of White Pine in other forest types after a sale	49		52		14
Add a Component of Red Pine/Jack Pine in aspen after a sale	5		5		0
Add a Component of Jack Pine in red pine after a sale	0		10		10
TOTAL components	66		79		36
Treatments by Forest Types					
Aspen (91)	1,009		877		493
Aspen/spruce (95)	169		115		70
Red Pine (2)	1,043		1,272		1,146
Paper Birch (92)	248		213		51
Maple (82)	195		161		92
Northern Hardwoods (89)	182		182		61
Jack Pine (1)	220		139		0
White Spruce (16)	58		58		58

Treatment	acres in Alt. B	Changes in Alternative C (from Alt. B)	acres in Alt. C	Changes in Alternative D (from Alt. C)	acres in Alt. D
Black Ash (71)	56		29		18
White Pine (3)	7		37		37
Balsam Fir (11)	27		24		0
Openings (97. 98. 99)	231		238		238
Total	3,445	---	3,345	---	2,264

There is an error in GIS. Stand 2-15-29 has an erroneous entry in the Silv D column. This stand is not being converted to Northern Hardwoods in Alternative D.